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NEWS IN BRIEF

PSS launch delayed

PSS, the Post Office's packet network that was due to open this month, has been delayed until the summer. Software to suit the Post Office's requirements is being developed in the US by Telenet and debugging is taking longer than expected. Telenet's UK agent for the Post Office contract is Plessey Controls of Poole, Dorset.

Bid for Serck

US aerospace and electronics conglomerate, Rockwell International has made a £33 million bid to take over Serck, a UK manufacturer of industrial valves. The bid values Serck shares at 77½p each, and has the support of the Serck directors. Rockwell already owns 29.7% of the company.

Belfast centre

A SOFTWARE engineering centre proposed by the Post Office for a site near Belfast could provide up to 400 new jobs. The centre will be used to service the Post Office's communications network throughout the UK. About 40 qualified staff will be needed during the first year and up to 200 within five years. Support staff will make up the total.

PO joins Stack

THE UK Post Office has joined Stack as an associate member. Stack, Standard Computer Komponenten GmbH, based in Frankfurt, was formed five years ago by ICL, Plessey, Nixdorf and Control Data to set component standards and to act as a common buying front for its members (CW, March 6, 1675). Olivetti of Italy joined two years ago (CW, May 11, 1978).

COMPUTER WEEKLY

Chappell looks to 'open' Europe

CHAPPELL ... "interested in boosting software business, possibly in the US."

EXPANSION into the US software business, in-house production of processor chips and the possibility of greater government support were issues raised by ICL's chairman of one month, Philip Chappell, last week.

He said the biggest single step for the industry would be the opening of frontiers by European countries to computer firms from other EEC countries.

On the software front Chappell said he was "interested in boosting" ICL's subsidiary, Dataskil, "possibly in the US".

Another "big issue" was how far ICL ought to go into microelectronic production. Chappell said the company would not produce memory chips, but mentioned the manufacture of uncommitted logic array chips as something ICL could be looking at. He welcomed the arrival of the National Enterprise Board's Inmos microelectronics firm both because it meant there would be a UK supplier and because it would give ICL a greater choice.

Turning to government support Chappell said there was a need for greater public understanding of the extent to which other countries — he referred to Germany, Japan and the US in particular — supported their computer industries.

Chappell said he welcomed investment by US companies in the UK. "But," he added, "with the US having 86% of the world computer market, things have gone too far. Is this dominance acceptable to European companies in the medium and long term?"

Cautious welcome for schools' micros

THE government's £9 million plan for funding micro education in schools has been given a cautious welcome by teachers and researchers.

The general approach of concentrating on software and teacher training rather than hardware (CW, March 6) gets broad approval but to many the plan is too vague.

The National Union of Teachers said it welcomed any new cash but that this money was far outweighed by the hundreds of millions being taken out of education by general cuts.

Charles Sweeten of Microcomputer Users in Secondary Education said the success of the government's plan depended to a great extent on a director yet to be appointed.

Emphasising the importance of centralisation, Sweeten suggested that the idea of appointing various existing schools as "centres of excellence" was unsound.

There would be difficulties, he said, over who would coordinate hardware assessment and set standards. There was also lack of leadership from the Department of Education and Science on the whole issue and he felt that Education Secretary Mark Carlisle should make a political statement on it.

Bob Lewis at Chelsea College agreed that leaving the purchase of hardware to the local authorities was the only possible approach.

The £9 million would go nowhere if spent on equipment, he said, and experience here and in the US showed how easy it was for hardware to be brought in before teacher training was adequate.

Lewis foresaw authorities having difficulties in finding the money.

Computastars details

ON your marks for Computastars 1980. The first UK heat is due to take place on April 27 and this year there will be two European heats in Holland.

More international teams are being invited to the finals which will be in Birmingham.

Full details of rules and an entry form will be published in next week's Computer Weekly.

ICL to market Fortronic systems

TO strenghten its position in the banking market in the UK and Ireland ICL is now selling the Transaction Terminal System from Fortronic of Fife. A complete system is seen here in front of Dr Peter Aylett (left), director of ICL's UK division, and Hugh Smeaton, managing director of Fortronic, just after they had signed the marketing agreement.

The microprocessor-based configuration includes a plasma display, a printer and a magnetic card reader. The separate keyboard on the right is a security feature which enables a bank's customers to key in their own account numbers.

The Transaction Terminal System was originally developed by Fortronic in collaboration with the Clydesdale Bank and is being used by Clydesdale in a network which by next year will take in 360 branches with 1,500 terminals. The network was first announced about three years ago (CW, January 27, 1977).

ICL has already received an order worth more than £100,000 from the Bank of Ireland for a modified version of the Transaction Terminal System. It will be used for foreign exchange calculation and branch accounting.

According to ICL a number of other banks and financial institutions are conducting trials of the Fortronic system for applications that include financial data capture, credit authorisation and the control of note dispensers.

UK M80s for IBM projects

● From front page

with two megabytes of main memory and 700 megabytes of disc storage while CPP has paid £250,000 for a two-megabyte Model 3 configuration that includes 1,400 megabytes on disc.

One big attraction of Magnuson for CPP was that all IBM's operating systems can be run on the M80, including MVS which is not supported on the existing IBM 4300 series machines.

The M80 Model 3 is about 50% more powerful than the IBM 4331, and CPP plans to take advantage of the M80's "strategic architecture" to field upgrade later this year to a Model 32 which is only marginally less powerful than the IBM 4341.

Until now CPP has used IBM bureaux like BOC Datasolve and CRL for its development work, but found that they were geared more to the development of applications programs than to systems software.

S Africans take over CAP subsidiary

● From front page

business is people, and we need to be sensitive in the market where the people are. It seemed sensible to surrender control in a market that far away."

The new chairman of CAP SA, P-E's managing director, John Fleming, explained that the company would retain complete access to CAP-CPP's products and services, including training. Local recruiting and training is to be stepped up, using packages from CIM-Deltek of Chicago.

Low-cost 16-bit mini from HP

HEWLETT-PACKARD has added a series of low cost compact 16-bit minicomputers to the bottom end of its HP1000 family. Called the L-series, the machine comes with a single chip CPU fabricated by Hewlett-Packard itself, using Complementary MOS/Silicon-on-Sapphire technology.

The machines in HP's high performance HP3000 family already come with a CPU consisting of three CMOS/SOS chips. CMOS and SOS offer advantages of low power, high heat dissipation respectively. The single chip CPU enables the complete L-series processor to be contained on a board measuring 6.75 x 11 inches.

The L-Series machines are supplied in the form of boards, a rack mountable box or as a complete system called the Model 10. The latter costs £12,000 and includes 64K of main memory, a 12-megabyte Winchester disc drive and megabytes of floppy storage all housed in a cabinet plus a VDU. The board machines including 64K cost £924 in quantities of 100.

IBM supports X21

IBM is reported to be supporting the X21 line protocol recommended for circuit switched digital data networks by CCITT. The company is understood to be producing modules that can be built into 3276 and 3770 terminals and 3705 front end processors.

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COMPUTER WEEKLY

Number 698 Thursday, March 20, 1980 Price 20p

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Briefing

System X misses out

THE Irish Ministry of Posts and Telegraphs has awarded the first £7 million worth of contracts in its £650 million five-year telecommunications programme to a joint venture between CIT-Alcatel, a major French telecommunications manufacturer, and Telectron, a domestic transmission equipment maker.

Britain's System X is thought to have missed out because it could not be put into production quickly enough. Further contracts are to be placed soon and are expected to involve L. M. Ericsson, the Swedish telecommunications company.

Visa in London

THE Visa International credit card organisation which embraces Barclaycard, is setting up a computer centre in London to handle the switching of credit authorisation data between Visa's European members. At present this job is handled by Visa's Base 1 system in the US using transatlantic links.

Leipzig highlights

A 16-BIT microprocessor — arranged as two eight-bit processor chips — and a daisy-wheel printer were the highlights of new East German products at last week's Leipzig Fair. But Western companies were finding it harder than ever to do computer business behind the Iron Curtain.

● Full details: pages 16/17.

Inmos cash threat

INMOS is still waiting for a decision by Industry Secretary Sir Keith Joseph, about both its second £25 million funding, and its application for an Industrial Development Certificate for its first factory in Bristol. There is still a chance that he may give way to Parliamentary pressure to have the plant sited in an assisted area. (Report, page 3).

Apples for teachers

SEVEN schools in the UK have been presented with Apple computers and accessories by Apple master distributor Microsense. A total of £30,000 of equipment was made available by the company.

Univac new division

A NEW division has been established by Univac to manufacture specialised semiconductors and integrated circuits, and the company is to invest $50 million in expanding its existing production capacity at Egon, Minnesota. The new division will produce custom designed circuits, standard parts still being purchased on the open market.

Siemens moves

A SECOND-GENERATION laser printer is on the way from Siemens of West Germany, and the company is planning to add a further Fujitsu M-series mainframe to its catalogue.

Manufacturers slate UK lobby group

CROFTS: Preferential public purchasing is not in the best interests of the customer.

THE new lobby group for the UK computer industry, UKITO, has come in for yet more unfavourable comment following last week's criticism by the CSA (CW, March 13). The United Kingdom Information Technology Organisation has been attacked by the UK subsidiaries of several US mainframe manufacturers over its main objective of protecting preferential public procurement for locally-owned companies.

Honeywell's director of marketing operations, David Crofts, said that trying to continue preferential public procurement policies was not in the best interests of the customer, because his choice was restricted. Reducing the competitive element, he said, meant that customers would not necessarily get the best deal.

Local industry should be encouraged by such means as grants rather than by single-tender purchasing, he added.

Crofts also cast doubt on ICL's claim that preferential treatment in other countries is based on the nationality of firms' ownership. In the US, he said, under the "Buy American" Act ICL's factories there were free to compete for government orders. UKITO is excluding from membership UK foreign-owned firms.

IBM UK also criticised UKITO's aims, commenting, "Any policy, process or activity that seeks to protect the interests of some manufacturers while limiting the freedom of users to choose the equipment most suited to their needs will, we believe, be damaging to the computer industry and to the UK economy as a whole."

Burroughs and NCR have also expressed the view that trying to protect the interests of the UK solely on the basis of who owns companies' shares was not sensible.

Said a Burroughs spokesman, "The UK stands to gain more by giving encouragement to any company manufacturing here."

Personal software for Texas managers

A RANGE of Pascal-based portable software has been developed to enable personal computers and similar small systems to be used for business administration and planning operations. Designed by Texas Instruments, the systems are being introduced throughout the company as a means of limiting increases in administrative overheads.

Texas Instruments is a highly decentralised company with some 1,500 departments, each run as a profit centre under a manager who makes his own financial decisions.

"If managers do not like proposals put forward at a corporate level they are free to reject them in most cases. It is their money they will have to spend," says Jim Bondy, manager of the PCIF, Personal Computing Information Fan-out project.

Bondy has taken the Pascal operating system developed by California University, San Diego, and put together a portfolio of software packages designed to be used by clerical personnel in the company's Product Customer Centres.

"The most important software is the development system which enables people to develop their own programs," says Bandy.

"We did the application packages principally to demonstrate to managers what a really small system could do for them, but we want to encourage them to write, or get written, programs that meet their own particular needs.

"The development system will support Cobol, Fortran, Pascal and Basic." The Cobol being offered is CIS-Cobol from Micro Focus of London.

"It cost me about a third of my budget," says Bandy, "but we had to have Cobol because managers may want to call in corporate programmers to write applications, and many of them only use Cobol or Fortran. We took CIS-Cobol because it is the only one which will fit on a microcomputer and matches the Ansi standard. We want to conform to Ansi standards wherever they exist because everything must be as portable as possible.

● Turn to back page

International Computastars

THIS year Computastars, for the past two years the UK's biggest athletics contest for computer personnel, is going international. There are to be two heats in Holland and several other countries are being invited to send guest teams to the finals, to be held in Birmingham.

So get your entry in for the big 1980 show — full details and entry coupon on page 13.

'All extension' digital PABX from AJ

AN all digital voice and data PABX is under development at a new division of Anderson Jacobson in Anaheim, California. Production is still some way off but it is likely to be announced some time next year.

The development is the main activity of a research team which until last July was part of Calcomp. It was sold off to Anderson Jacobson in the general re-shaping of Calcomp which ended with the takeover by Sanders (CW, February 21).

The system uses codecs in telephone handsets so only digital signals are handled by the switch. A major feature is the capability of having all extensions in use at the same time. Usually only 30% can be in use at once.

Transac favourite for stake in GA

TRANSAC of France has emerged as the front-runner among the contenders for a deal with US minimaker General Automation. Discussions involve Transac making an injection of capital equivalent to 20% of the value of the company.

Transac is a subsidiary of CIT-Alcatel, itself part of the CGE group. It specialises in terminals, including automatic teller terminals for banking, and has built Incoterm SPD series terminals under licence for about a decade. However Incoterm, bought by Honeywell two years ago, has now been merged with other Honeywell small systems divisions, and French observers expect the deal with Transac to be terminated shortly.

Although CGE last year sold its interest in Compagnie des Machines Bull, which holds the 53% French stake in Honeywell's Continental partner CII-Honeywell Bull, it has reaffirmed its continuing interest in the computer industry, both through its GSI software and services subsidiary and through

● Turn to back page

INSIDE THIS WEEK'S CW....

HEALTHY FUTURE

Competition for public sector orders is healthy and is likely to become more intense in the future. Brule, managing director of CII-Honeywell Bull. Tim Palmer reports on these latest views from Paris. Page 9

NORWEGIAN TALENT

There's plenty of computer talent in Norway and Keith Jones looks at three of the less well-known operations — Ican, Mycron and Tandberg Data. Pages 24/25

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JOB OPPORTUNITIES: PAGES 28-63

High-speed range replaces ICL 2903

A NEW processor with a formidable rated speed of three million instructions per second is at the heart of the new ICL ME 29 series, announced today as the successor to the 2903 series.

Two models are announced, the 35 and 45, and the series offers up to five times the throughput of the 2904, according to ICL.

It runs under a new operating system developed from the existing Exec, called TME, for Transaction Machine Environment, which supports up to 24 multi-task workstations designed to support operator mode, direct data entry and multi-access interactive working.

The Model 35 comes with 64 to 128K-characters of microcode control memory, which has a cycle time of 155 nanoseconds. The Model 45 comes with twice as much microcode.

The main memory ranges from 256K to 1 megacharacter, and disc storage starts at 50 megacharacters with a maximum of 16,000 megacharacters.

Massive

GOODYEAR has announced that it is to develop the "massively parallel processor" wanted by the US National Aeronautics and Space Administration for processing data from satellites (CW, January 18, 1979). The Goodyear machine will have 16,384 processing elements, four times the biggest ICL Distributed Array Processor.

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COMPUTERVIEW

Rising sun behind the clouds

WE in the UK do sometimes seem to wallow in our economic and social misfortunes, and the national predilection for hair shirts and breast-beating will have been given a further boost by Monday night's World In Action on ITV when Wynne Godley's Cambridge group of economic forecasters preached hellfire and damnation with a fervour which would have delighted the most jaded Welsh chapel congregation.

Yet there is comfort to be had if one looks for it.

They made no headlines, yet a delegation of Japanese businessmen visiting the UK last week went away with a very different impression of the UK than they came with.

The delegation included representatives of two of Japan's Big Three computer companies, Fujitsu and Nippon Electric, and was headed by Toshikazu Hashimoto, an adviser to the Japanese Ministry of International Trade and Industry, MITI.

The mission, sponsored by the Japanese government, came to examine the climate for investment in the UK, and among the plants it visited were Burroughs in Northumberland, Motorola in East Kilbride, Sony in Bridgend, and Siliconix in Swansea.

The members also had talks with GEC-Hitachi, the Scottish Development Agency and other regional development bodies, Secretary of State for Industry Sir Keith Joseph, the TUC and the CBI.

One can hear the cynics exclaiming that after meeting that lot, they must have been itching to get back to Tokyo. The cynics are wrong.

Since nothing in Japanese business moves without the sanction and blessing of MITI, so Hashimoto's views deserve attention.

"We visited both Japanese and American companies, and the state of labour relations was better than we expected," he said. "The key to good labour relations is good communication between the management and the workforce, and we found this in the companies we visited. We found that the quality of labour was good, and the wage levels were reasonable.

"The infrastructure is impressive, with excellent communications and top quality educational establishments in the neighbourhoods we visited.

"We found a positive attitude to foreign investment at the Department of Industry and in the regional organisations. We also recognise the importance of the financial services offered by the City of London, and a further attraction is that English is the foreign language most often taught in Japanese schools.

"We shall be preparing a detailed report for MITI when we return to Tokyo, but while the UK economy gives no grounds for excessive optimism, we believe the UK is an attractive place for our country to invest."

Going into details on some of the points, Hashimoto's delegation found the TUC keen to encourage investment, and was particularly impressed by research in microelectronics and wave power at Edinburgh University.

With 22 Japanese companies employing 6,000 people, the UK is already the biggest investment base in Western Europe for Japanese industry, and the delegation was looking for locations to site further small technology ventures in high growth industrial sectors.

"Our biggest doubt about the UK was over labour relations. At the end of our visit, a few members of the delegation still had some worries, but we are now much more impressed with the possibilities in the industrial relations field.

"I must stress again the importance of good communications. Things are changing here, and in particular we noticed that there is now much more [illegible] among employees in the companies for which they work."

LETTERS to the EDITOR

Training for change: Government must act

IN Computerview (CW March 6) you referred to the recent meeting of the Parliamentary Computer Forum on the topic "Education and training for change". The meeting discussed what is being done, and what should be done, in schools, polytechnics and universities, to provide general and specialist courses appropriate to the needs of industry and society in the foreseeable future. As one of the speakers at the meeting, may I comment on three points?

You say, "The overall mood left by the meeting was one of profound depression." I am sorry if that is so. The situation is indeed depressing, but I think the speakers hoped to stir up something more productive than depression in their listeners. An apt response would be one of anger at Britain's failure to seize opportunities, and of determination to seek the great improvements that could easily and rapidly be achieved.

You also write, "Everybody seemed to be demanding that someone else DO something about the problem." That gives the impression, perhaps unintentionally, that schools, polytechnics, universities and industry are casually passing the buck about, and that it would be better if they stopped whining and DID something themselves. Two things must be clearly understood. First, those departments and individuals who know what needs to be done are already working at and beyond full stretch: there is nothing more that they can do. Second, it is not an undefined "someone else", but government, that must do something. Last year the UK spent £7½ million on computer education and training; the Japanese spent over £3 billion. We are talking about an essential investment in our national future, which only government can make.

You refer to the difficulty of persuading "more of the best young people" to pursue science and technology through school and higher education into industry. That may still be a problem in general, but in computer science it is not. Schoolchildren, both boys and girls, respond avidly to whatever crumbs can be made available to them at school, and are applying for the better university and polytechnic courses in numbers far beyond those that can be accommodated.

Your Computerview was headed, "Changes don't just happen." They certainly won't, until someone in government realises the crass blindness and confusion of the present lack of policy, and takes action.

COLIN TULLY
Department of Computer Science
York University

Role of the engineer

AS a chartered engineer who has no connection with computers, I feel that I must comment on Focus' ill-informed article (CW, February 28), in which he refers to engineers in general and to the Finniston Report in particular.

Computers have become a very important facet in the working lives of a vast number of professional engineers. A few are the electrical and electronics engineers who design and develop the complex hardware on which your industry depends, but the majority are, in fact, users.

Engineers of a variety of disciplines — civil, chemical and mechanical — now make extensive use of computers either as an aid to analysis, design, planning, research or costing or, increasingly, in real time applications such as the online control of sophisticated processes and plant. These engineers usually develop their own software and systems and are, in the fullest sense, computer professionals.

Before Focus comments on the engineering profession he should, perhaps, find out what the word engineer means. The Finniston Report explains it.

In his investigations it may well be that he will discover a good many similarities between "DP professionals" and professional engineers. Certainly Finniston's new British Engineering Authority, like the British Computer Society, is unlikely to recognise computer engineers (or any other sort of engineers) unless they have a brace of degrees, although most of us do not have toolbags on which to attach them.

R. W. HILL
Hazlemere
High Wycombe
Bucks

Status of Prestel

YOUR comment in the report on Prestel's "dirty books guide" that "the contents of viewdata or teletext frames are believed to be subject to the same laws as any other published material" is well made (CW, March 3).

But is Prestel a publication? Or is it a computerised information retrieval system? Or just "a computer"? Or even the fifth TV channel? What exactly is its legal status? And what are therefore the legal constraints, responsibilities, liabilities, rights and protections of the Post Office, Information Providers and users alike?

Censorship, "information product liability" and copyright problems are already topics of occasionally heated discussion within Prestel UK. Prestel International, with its compounding of such problems by [illegible] of considerations of trans-border data flows and privacy and similar [illegible] as legislation in receiving countries, might well out-[illegible] all.

Dr STEPHEN [illegible]
Infolex Services
Witham
Essex

THE EDITOR welcomes letters commenting on articles published in Computer Weekly or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication.

1984 and all that...

THIS week's example of the strange things people say in the media about computers was sent in by I. A. Hannell of Southwold, Suffolk, who wins £5.

Israela gave her husband of 10 years [conductor Lorin Maazel] a $10,000 birthday present — an Apple 1 baby computer — and told me: "It's a very sophisticated machine. Lorin is very keen on maths. I think it can tune into satellites."

Nigel Dempster in the Daily Mail

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GOVERNMENT COMPUTER REQUIREMENTS

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A small, communications based information processing system is required by NATEC at HMS Daedalus. It is required that applications software for the initial system be provided by the supplier.

Delivery is required by November 1980.

Applications for copies of the Summary of Operational Requirements should be sent to the Central Computer and Telecommunications Agency (Con 8A/1), Gildengate House, Upper Green Lane, NORWICH NR3 1DW quoting Reference No. CP 12/5/CW. Completed proposals must be received not later than 1 May, 1980.

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DIGITAL MICROSYSTEMS LOW COST BUSINESS COMPUTERS

Take-off for robot industry

NEW risk capital and joint ventures look likely to create a flourishing robot manufacturing industry in the UK within the next few years. But, initially at least, the pace is to be set by overseas technology.

Attracted by funding of £420,000 from the National Research Development Corp and a further £240,000 from the Department of Industry, the US robot manufacturer Unimation is to start building its PUMA, Programmable Universal Manipulator for Assembly model at a new factory in Telford, Shropshire.

Two joint ventures, one between software house SPL and engineering company Remek Microelectronics (CW, March 6), and the other between Fairey Engineering and six Italian robot makers, have also been announced.

PUMA robots are currently being used by US car manufacturer General Motors for fitting light bulbs into the dashboards of cars and the assembly of electrical sub-systems and carburettors — sophisticated work involving precise movements along many axes simultaneously. The PUMA robot arm can work to tolerances of + or — 0.004 inch (0.01 mm).

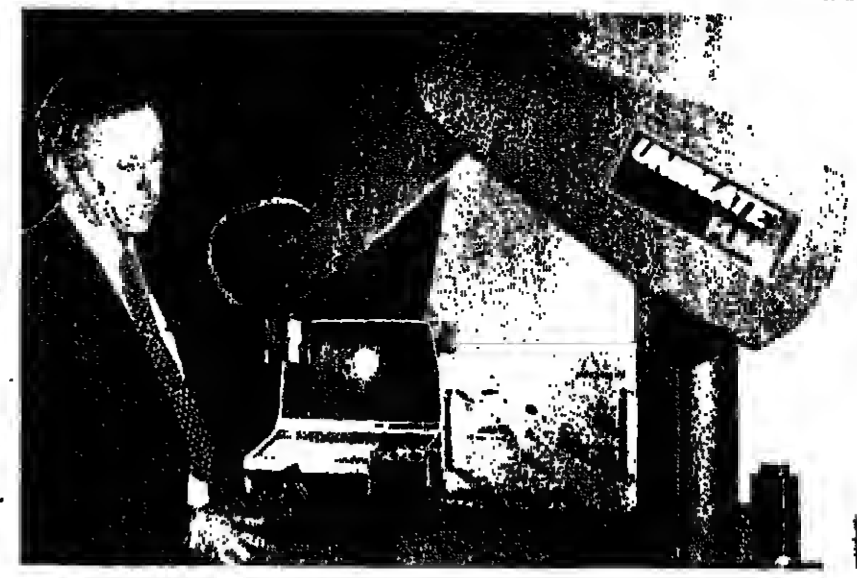
Among other applications in the UK, Unimation has been asked to supply PUMAs for the manufacture of electrical harness for heavy machinery and the sorting and packaging of chocolates.

Italian robots with wide ranging capabilities — including welding, assembly, and paint spraying — are to be marketed initially and eventually manufactured in the UK by Fairey Engineering. As a member of the Production Engineering Research Association, Fairey will be able to draw on the advice of a special team set up within the association under the DoI's scheme for the promotion of industrial robot technology in this country.

It will also be able to sell the robots in overseas markets held by the Italian robot companies as part of the joint venture terms.

Automated assembly systems will be the cornerstones of British Robotic Systems, the totally British joint venture between SPL and Remek Microelectronics. SPL will handle the design of the systems, while Remek will manufacture them.

● An international study aimed at finding new robot equipment that UK companies would be willing to manufacture has been started by the Industrial Innovation Centre, London. The IIC describes itself as a body "concerned with finding new products and processes for industry" and has already introduced many UK companies to foreign manufacturers with a view to joint ventures.



Roger Cakebread, managing director of Unimation (Europe) programming a PUMA robot with an application procedure.

Separate system for Prestel closed groups

DEMAND for closed user group facilities on Prestel has led the Post Office to set up a separate computer at Nine Elms in London. The 100,000 pages and 80 ports on the system have been split into four lots of 20 ports and 20,000 pages and are being offered in a sealed paper auction.

Two years ago the Post Office decided to limit closed group usage to 18% of the pages on the public system so as not to degrade the service available to all.

In the Prestel International service the mix of closed group and general use is different and 60 companies have closed databases. Two types of closed group are in use — private ones for internal company information and subscription services such as the daily information put up by Lloyd's of London for its customers.

Other users of the Prestel International market trial now include Unilever, Texas Instruments, Sony, ICL, ICI, Rank Xerox, and Chase Manhattan Bank. General information providers include the BBC, the Economist, Saric, Fintel and IPC.

The service is available in Sweden, West Germany, Holland, Switzerland, Australia, the US and the UK.

Timeplex sets up UK datacomms company

TIMEPLEX, the US data communications manufacturer, is setting up a UK company and plans to start trading on April 1 from offices in London and Leeds.

The Timeplex range of statistical multiplexers and network controllers has previously been sold in the UK by Racal, which will now have a non-exclusive marketing licence for the UK.

The two new directors of Timeplex UK are Bryan Gray and Harry Thomas, who both come from the Racal sales team.

Timeplex claims the largest installed base of time division and statistical multiplexers in the world and claims customers from the widest range of industries. It was founded in 1969 by Edward Botwinick, as a large but inactive investor for a venture capital company. He left four years later, but returned in 1977 to rescue the company.

MPs put pressure on Joseph to move Inmos factory from Bristol

STRONG lobbying by regional MPs is placing increasing pressure on Secretary of State for Industry Sir Keith Joseph not to grant Inmos the Industrial Development Certificate for its first factory in Bristol.

The opinions of MPs were aired last week in Parliament during a debate on the National Enterprise Board. Much of the discussion centred on two aspects of Inmos' move into the Bristol area: whether the NEB had given an undertaking to the last Labour government to site the factory in an assisted area, and what were the actual contents of the report prepared by consultants PA International.

Alan Williams, Minister of State at the Department of Industry in the last Labour government, emphasised that as far as he was concerned there was a firm commitment that the first production unit would be sited in an assisted area. The commitment was sought, he said, to stop the clustering of new companies around Inmos in Bristol, an effect noted from US experience. It was only on receipt of such a commitment that an IDC for the technology centre to be sited in Bristol was granted.

Countering this, William Waldegrave (Conservative, Bristol West) pointed out that Leslie Huckfield, an Under-Secretary of State at the DoI in the Labour government, had said that the location of Inmos' facilities "must be a matter for the NEB and the company."

On the suitability of Bristol as the site, Alan Williams said it appeared to have been proved that top research people would go to Bristol by a survey of school-leavers carried out in the mid-1950s. "The record shows that certain individuals involved in pressing the case for Inmos will trump up any hare-brained argument," he said.

He then inquired whether the current Under-Secretary had seen the PA International report. He felt sure this was not so, even though it was on the basis of this report that the decision to site in Bristol was allegedly being made. He felt a copy of the report should be available to Members.

Pope appeals for Schild girl

THE Pope has appealed for the release of Annabel Schild, the 15-year-old daughter of Rolf Schild, founder of SE Laboratories, who was kidnapped with her mother and father while the family were on holiday in Sardinia last August (CW, August 30, 1979).

Schild was released after a fortnight to raise a ransom for his wife and daughter and it was announced last week that Mrs Schild had been set free in January after £300,000 had been paid. Annabel is still in the hands of the kidnappers and news of her mother's release was kept secret in the hope that the child could also be recovered. It was as a result of an approach by Rolf Schild that the Pope revealed the release of Mrs Schild and made his appeal to the kidnappers at his customary noon appearance on Sunday.

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Downtime

by Chad

Nonconformist state of the art

QUITE an outcry I've had from readers over the suggestion in Which? magazine that people who don't want to dress neatly should become computer programmers. Actually what the toothbrush testers said was: "If you're not keen on conforming, perhaps you'd better go for a 'creative' job or become a computer programmer."

Note the implication that creative jobs and programming are mutually exclusive. I don't know about this. I would have thought that the programmers who have been arranging for millions of pounds to be paid into their own bank accounts were pretty creative. How about the bloke in the US Army who put a piece of code into a huge online system with a date switch on it, set to go off the day after he had been demobbed? Up came the message on all the consoles, "Your system will go down in 15 seconds from now." Carriage return line feed. Then Boom! Weeks of sorting out the chaos. There's creativity for you, wouldn't you say?

It's "conforming" that is the crucial word. Of course programmers can't be expected to conform to specifications, standards, project timetables, budgets, that sort of thing. But do they refuse to conform over personal appearance? Some people think that programmers all look exactly the same: specifically, they have beards and blue suits (the male ones that is).

Most important of all is Which's claim that to "get on" you must wear a suit and tie; otherwise become a programmer. This means that if you become a programmer you won't get on. Oh dear, the ramifications of this are getting beyond me. Still, I am sure it is sensible to choose a career according to the clothes you get to wear. After all, that's why people become sailors and firemen isn't it? Never mind about aptitude and job satisfaction.

Evelyn Waugh claimed that when he went for the interview for his first teaching job the only question he was asked was whether he owned a dinner jacket. Well, clothes maketh the man.

Sacre bleu du printemps

MY colleague Claire Gooding tells me that the announcement of a recent software distribution deal in California was headed thus: "Software Module Marketing acquires world-wide marketing rites for ACEP." Whatever can those exotic West Coast programmers be getting up to now?

Have the druids given up Stonehenge as a mainframe and headed out after the sun, using circles made of monolithic chips? Or does the firm throw in a free Roman orgy with each sale? We might get a clue from the address that SMM gives: the Penthouse of the Crocker Bank Building in Sacramento.

Many a slip (Grauniad)

A READER, Trevor Davies of BIS Applied Systems, has pointed out to me this remark that appeared in the Guardian the other day: "A programme costing £9 million has been launched by the Government to teach children about the uses and implications of the micro-drip."

My first reaction was, what an unkind way for the Guardian to describe Iann Barron, gallant founder of Inmos, Britain's very own chip-making enterprise! But on reflection I suppose it was talking about new equipment for children to do their own intravenous feeding of pet mice.

MICHIE'S PRIVATEVIEW

Turing's real place in our history

Professor Donald Michie is head of the Machine Intelligence Research Unit at Edinburgh University.

IF asked about A. M. Turing's contribution to computing, most people reply with the Universal Turing Machine. This abstract Dalek, when provided with an unbounded tape on which has been inscribed (a) the data and (b) a description of a special-purpose machine, will potter up and down the tape, peering here, overwriting there, until, behold, remaining on the tape in solitary splendour is a succession of marks at which the Dalek halts. These encode the "Answer".

The machine-description on the tape (we would say the "program") must be expressed in whatever language corresponds to the UTM's own table of instructions (we would say "interpreter"). Further, as a matter of taste, convention and general mental tidiness, it is ordinarily supposed that the Dalek does not run amok in the program part of the tape, re-writing symbols with the same abandon as when having its pre-ordained fun in the data space.

Those who devise and document programming languages are a special breed — tasteful, conventional and tidy-minded to a fault. Little wonder that the UTMs which they turn out from their academies, whether sturdy creatures in the Fortran mould, or elegant prancers of Algol or Pascal extraction, are fitted with a restraining harness to make sure that the above-mentioned outrageous behaviour cannot occur. I refer to the conspicuous absence from all but a couple of experimental AI languages of facilities for operating on code as data, and executing data as code.

Not only is there nothing in Turing's formalism to say that a UTM may not do this, but he himself attributed enormous importance to the possibility that it might. In a lecture to the London Mathematical Society in February 1947 he clearly saw the potential phenomenon of program synthesis as providing the needed cornerstone of the future task of machine intelligence and learning.

Over 30 years later much work on program synthesis is at last in train, including in centres such as IBM's Yorktown Heights Laboratories where practical applications are in mind. The main stream, however, does not follow Turing's "learning by doing" motif. Rather, the re-write decisions tend to be procedure-driven rather than data-driven, deductive rather than inductive. The small and scattered "inductive learning" school, on the other hand, compensates on the score of concrete results.

Inductive logic, the classical tradition from which data-driven approaches draw strength, has always had a bad press. Francis Bacon conceived in bold outline the entire possibility and structure of technological R & D as a world-transforming enterprise. His name is shunned among the best scholars. Baconian logic models too faithfully for public exhibition the actual cognitive style of homo sapiens, just as certain physical functions of man, however life-giving in their effects, are thought best not publicly performed or mentioned.

Turing himself knew where he stood, and characteristically it was not on the side of convention or of tidiness. He went so far as to imply that the machine's self-accumulation of intelligence should proceed by inductive modification of its own instructions in response to the behaviour of humans, who would thus be acting as tutorial data-sources:

"A human mathematician has always undergone an extensive training. Their training may be regarded as not unlike putting instruction tables into a machine. One must therefore not expect a machine to do a very great deal of building up of instruction tables on its own. No-one adds very much to the body of knowledge. Why should we expect more of a machine? Putting the same point differently, the machine must be allowed to have contact with human beings in order that it may adapt itself to their standards. The game of chess may perhaps be rather suitable for this purpose, as the moves of the opponent will automatically provide this contact."

Current research is beginning to generate a [illegible] synthesised trickle of [illegible] executable representations [illegible] knowledge. Some of these are humanly assimilable [illegible] others not. Hazards arising [illegible] user-opacity in the latter [illegible] form a current topic of [illegible]

● In this, as in so many [illegible] things, Alan Turing saw [illegible] than his contemporaries. Appeal is currently [illegible] launched by the A. M. [illegible] Trust to collect £10,000 to [illegible] a British-based annual [illegible] Lecture. Those interested [illegible] contributing are invited to [illegible] to A. M. Turing Appeal, A. M. Turing Trust, 1 Hope [illegible] Square, Edinburgh EH8 [illegible]

REFERENCE

The Automatic Computing En[illegible] A. M. Turing. Public lecture [illegible] ered at the London Mathe[illegible] Society, February 20, [illegible] Typescript in Turing Colle[illegible] King's College Library, Cambr[illegible]

AISB workshop

A WORKSHOP on intelligent teaching systems is to be held at Leeds University from April 9 to 11. Sponsored by the Artificial Intelligence and Simulation of Behaviour Society, AISB, speakers will include Professor David Barron of Southampton; Dr J. S. Brown of Xerox Parc; Dr M. L. Miller, formerly of MIT and now with Texas Instruments; and Dr Patrick Winston, director of the AI lab at MIT. Full details of the workshop may be had from Dr Derek Sleeman, CBL Project, The University, Leeds, LS2 2JG. Tel: 0532 31751, ext 7264/7108.

FOCUS

No room at the top for DPMs

SOME DPM's best friends and colleagues are often found to be sales managers. However, if sales executives follow the advice of my colleague Trader, the friendship status could be short-lived.

Trader believes there are two reasons why salesmen are reluctant to make their initial sales contact at managing director level — conscious or subconscious fear and inadequacy (CW, February 21 and 28). Trader has omitted a third and possibly more positive reason.

Any salesman going over the heads of DP management would quickly find himself out of the installation, out of the running and out of potential orders.

Trader's view is that directors are, in the main, quite ordinary people, as vulnerable as the rest of us. DPMs, it so happens, are even more vulnerable and certainly considerably more sensitive where their job security and status is involved. Any directive from above in respect of choice of equipment would not be gracefully received by the DP team. Many DPMs would react by researching the pages of Computer Weekly for a new billet.

Choice and selection of equipment is not the end of the matter, in fact they are hardly the beginning. The managing director would rapidly discover that full-bodied co-operation is essential from all parties to get any new or proposed system running.

Confidence in such projects is all-important and this is hardly likely to be enhanced by the DPMs knowing that the sales manager has a closer relationship with his MD than that enjoyed by the DP team.

No DP manager worth his quota of salt would wish to isolate the MD from major selection procedures. But the MD involvement should be triggered by the DP rather than the sales team. At a suitable point in the selection exercise, the DPM will naturally want to make a full-scale presentation to senior executives of the company and this could well include a contribution from a selected list of potential suppliers.

The DP manager is paid to protect the MD from daily problems and crises. Similarly it is not necessarily the role of the MD to evaluate levels of technology, suitability, service and back-up and reputation of equipment suppliers.

The DPM requires the [illegible] scale co-operation of [illegible] management. Advice in [illegible] of financial matters would [illegible] matter of routine be referre[illegible] the company accountant [illegible] users' departments would [illegible] fully involved in any new [illegible] edures and developments.

The role of the MD — [illegible] from putting his signature [illegible] the order form — should be [illegible] of offering encouragement [illegible] areas of the organisation [illegible] assist in the task of getting [illegible] new project up and running.

Often a note from the [illegible] the supplier has more [illegible] than that of the DPM where [illegible] example, delivery difficulties [illegible] threatening to hold up the [illegible] ject. Similarly the direct [illegible] volvement of the MD as [illegible] tor on such topics as [illegible] partment application [illegible] usually promotes a speedy [illegible] lement.

That there is room [illegible] for involvement in DP [illegible] not contested. But this [illegible] must be seen to be [illegible] dating the interests of the [illegible] team, rather than that of [illegible] salesmen.

10 years ago

From Computer Weekly of March 19, 1970

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ON our People [illegible] the March [illegible] Philip Rule was [illegible] chairman [illegible]

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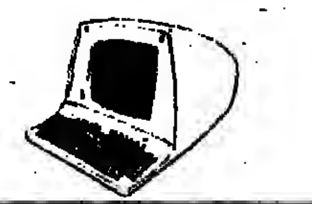

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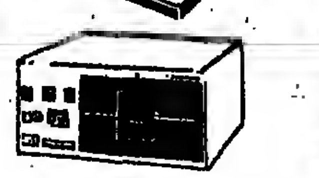

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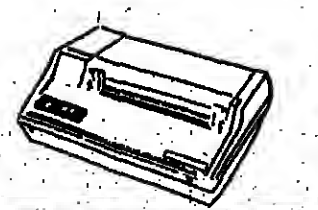

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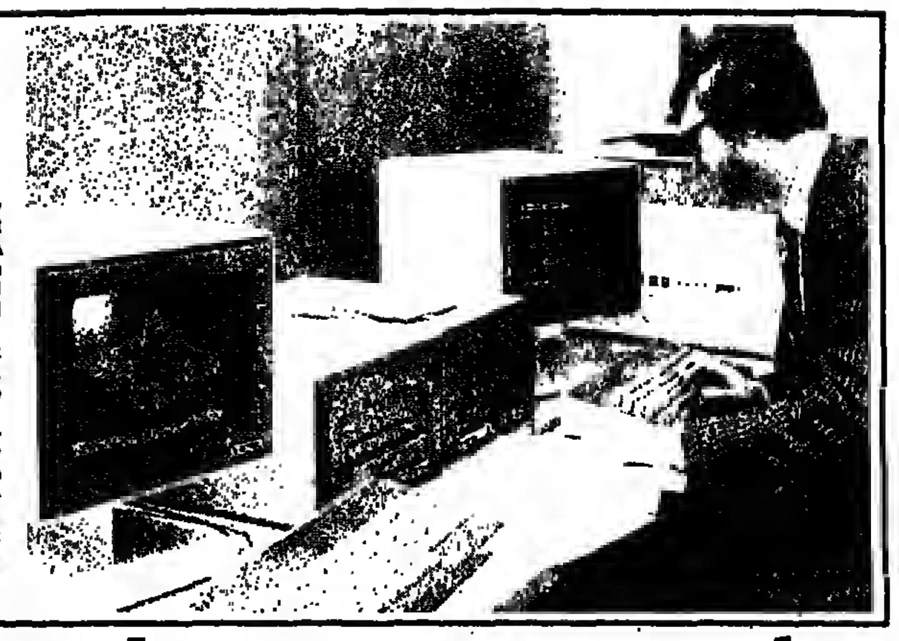
SRC buys 10 graphic systems



THE Science Research Council has spent nearly £50,000 of the £1.4 million allocated to its Distributed Computing Systems programme on 10 Terak 8510A monochrome graphic systems. One of them is seen here in the computer room of the Rutherford Laboratory's Atlas Centre being used by the technical secretary of the DCS programme, Dr David Duce.

The Atlas centre is taking two of the 10 Terak systems and the others will be used by some of the more than 20 university projects being funded by the DCS programme announced about 18 months ago.

The Terak 8510A is sold in the UK by Dicoll Electronics of Basingstoke, and manufactured in the US by the Terak Corp of Scottsdale, Arizona. The system is configured around a Digital Equipment LSI-11/2 processor and comes with 28K words of main memory and an independently controlled 4K RAM which enables an unlimited number of different character sets to be created. Animated graphics and text can be displayed simultaneously.

Software schemes must meet EEC objectives

RULES for the EEC software support scheme, announced last week (CW, March 13) have been carefully framed to further a number of EEC objectives. Projects submitted for support will have to involve collaboration between users or companies from at least two EEC countries, and should not be set for launch before the last quarter of this year. Support is offered both for software development studies and projects, and for computer applications.

In the case of general software development, projects should further at least one of five EEC objectives. These are to implement and further the use of standards; to improve portability of software; to design for easy conversion; to enhance the efficiency of data processing systems; and to further the development of network management and distributed processing techniques in order to encourage the use of EEC standards.

In the case of computer projects, there are five objectives, one or more of which should be met.

They should be applicable to the needs of different countries so that systems for environmental monitoring, air, land or sea traffic control, international transport or Customs would be appropriate.

Another possibility is projects which further EEC policy aims such as free movement of labour and capital, communications, agricultural and regional policies, or energy, environmental or social policy.

Projects which aim to save public expenditure in fields like health and education, applicable in more than one country, are of interest.

Economically beneficial applications furthering Community aims in the field of standardisation of techniques such as computer aided design and process, industrial and administrative control will be considered.

Finally, applications implemented at Community level and having an impact on standards in distributed processing and communications will also be welcomed.

If projects cost £60,000 or less, support of up to 100% of the cost is available, otherwise the limit will be 50% of the cost.

Aid will take the form of interest free loans for the development phase and for the first two years of exploitation. After that they will be repayable with interest from the proceeds of exploitation over the following four years.

Applications have to be in by June 1, and selection of projects for support will be made in October.

People wanting copies of the call for applications should contact the Computer Systems and Electronics Division of the Department of Industry on 01-212 5509.

Warren Point study on real cost of micros for DoI this month

THE real costs and the disciplines needed to make effective use of microprocessors is one of the key sections of an interim report on the application of personal computers in business and industry which should be with the Department of Industry by the end of the month.

Prepared by Warren Point, the Stevenage systems and software house, the report is part of a study commissioned by the Department and due to be completed by May. Suggested by Warren Point, the main aim of the study is to produce an unbiased report for small company managements which may be considering the installation of a microcomputer system.

Brian Thompson, who is carrying out the study at Warren Point, said that it was not his objective to produce a comparative study of different machines, but rather to study them, with what they can offer the user, as a group.

Among the factors being considered are reliability, availability of software packages; the problems of producing written software, and after-sales service and support. About a dozen systems have been tested, said Thompson, including the Pet, Apple and TRS-80, with more expensive systems such as the North Star Horizon, and Rair Black Box.

Though he did not wish to pre-empt the interim report, Thompson did indicate that he had not been happy with the quality of software available for these systems.

NCR for Hong Kong hotel

AN order for NCR's Modular Lodging System has come from the Hong Kong Royal Garden Hotel in Kowloon. Still under construction, the 470-room hotel will use an NCR 3280 microsystem with about 80 megabytes of disc storage in the front office. This will support seven VDUs and other peripherals.

Export award for Prestwick

PRESTWICK Circuits, manufacturer of printed circuit design and printed circuit boards, was among five companies to win an export award for smaller manufacturers. The award is sponsored by the British Overseas Trade Board, the Association of British Chambers of Commerce, British Airways and the Daily Express, and supported by the CBI, the TUC and the small firms division of the Department of Industry.

The 10 winning companies, five winners and five runners-up, increased exports last year by an average of 212%. Each company won a trophy, an export award certificate and a holiday for two in Kenya for a nominated employee.

Dundee decision

THE NCR factory at Dundee is now part of the company's newly-formed General Systems Division which covers terminal systems for factory data collection, banking and finance. The Dundee plant will also continue to build the NCR 8200, 8400 and 8500 computers.

CMC-Europe adds a business micro to its line

CMC EUROPE, the company being acquired by Rediffusion of the UK on behalf of its Redifon Computers subsidiary, has added a small business system from Rexon Business Machines Corp of Culver City, California, to its product line.

The machine is the Rexon RX30, a business microcomputer built around the Intel 8086 16-bit microprocessor, running under Rexon's Recap multi-tasking operating system. Programmed in Business Basic, the machine supports up to eight display stations, and comes with up to 64K words of main memory and 20 or 40 megabytes of disc memory.

CMC-Europe is offering the system as the CMC 7030. There are no plans for Redifon to add it to its UK product line at present.

Rexon Business Machines is a new company founded by Dr Ben Wang out of the proceeds of his sale of Wangco, the disc manufacturing company he founded, to Perkin-Elmer (CW, September 13, 1979). Dr Ben Wang is not related to Dr An Wang, founder and head of the business computer and word processor company which bears his name.

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PAGE SIX for programmers and analysts

by Judith Morris

Turning the student into a marketable commodity

YOUR first job is not necessarily the most important in your life, but it is almost inevitably the one which will involve the most deliberation, thought and anxiety.

All over the country at this moment thousands of students in their final year of full-time education are grappling with the double problem of getting a degree and deciding what to do when they eventually graduate.

Students agonising over a career are, however, in the happy and unique position of being surrounded by countless books and pamphlets designed to help them with their decision, and professionally trained staff who are qualified to advise them.

In addition, every day from January until the middle of March, and again in the summer, representatives of companies from all over the UK are visiting colleges and universities to interview students in the ritual now known to everybody as the "Milk Round".

Last year 7,654 students graduated from London University. The University's careers advisory service offers the undergraduate every possible help in choosing a job, with a total of 80 staff and 13 sub-offices dedicated to turning the student into a marketable commodity.

Businesslike in its approach, the careers advisory service provides literature, extensive advice on a personal level and arranges interviews at its own offices with prospective employers.

Kenneth Dibden, director of the University of London Careers Advisory Service, described the process which is used by 75% to 90% of the university's students.

"The students receive the greatest possible help," he said. "If they do not find a job this time round — and they can attend as many of the pre-arranged interviews here as they wish — we have another Milk Round in the summer months."

Several weeks ago on this page we referred to graduates who enter the computing industry, either through choice or because it is now one career where academic disciplines are irrelevant, and many students with degrees in arts subjects find themselves in computing because they have no other option.

Dibden denies that students who are studying such subjects are encouraged to enter computing. "It is ultimately for them to decide," he said. "The most we can do is help them to come to sensible decisions. They are certainly not 'encouraged' to do anything. We can't stop them if they want to apply for jobs where there is only a slim chance of them getting in, but we do try to make them consider something else as well.

"Unless there are radical changes in the education system," he continued, "the situation where there is a surplus of students qualified in the so-called 'useless' subjects will continue. Often we find that graduates in subjects such as music or classics take to computing very well."

On a typical day at the careers office last week, representatives of ICL, among other companies, were visiting students there who had expressed interest in first interviews with the firm.

The waiting room was filled with undergraduates either waiting to be interviewed or engrossed in studying the reams of information available to them.

Together with DOG, GO '80 and other compendiums of opportunities for graduates, all the major companies and many of the smaller ones send specially designed publications to careers offices to encourage the "right" sort of graduate to apply to their firms.

The impact of all these glossy brochures is difficult to assess. Students who wish to apply for a job in computing will usually apply to most of the major companies.

Those I spoke to had written letters without any preconceived ideas of which firm they found the most attractive.

One student, however, drew the line at IBM, the only major computer company he had omitted from his list. Apart from the fact that IBM recruits considerably fewer graduates than the other companies, the idea of working for a large US concern to which you have to "sell your soul" has little appeal to the average student, and unfortunately this seems to be the image most people have.

This prejudice, however, has certainly not been formulated as a result of reading IBM's brochure for graduates. Most of the major computer companies, including IBM, use a virtually uniform approach by presenting case studies and quotes from graduates already fortunate enough to be in their employ.

"You can't hide in the corner with IBM," says one young enthusiast speaking from the pages of IBM's publication entitled Personal Presence Means Recognition..

"Sheer challenge. It's as simple as that," grins a fulfilled Data Logic graduate.

Proving that her degree is not entirely redundant, one ICL employee says, "It was only when I talked to friends who knew ICL that I realised my degree in French could give me an entrée into a computer company."

Carefully juxtaposed next to snaps of eager-looking young men in newly acquired suits are photographs of people playing football, standing outside pubs with friends or skiing happily in the Alps, to show perhaps that things don't have to change that much when you start work.

This is difficult to believe, however, when you read the literature provided by companies such as CAP, which favours the "hard line" approach. Its ominous message is, "We do not claim that CAP is some form of earthly paradise for graduates or for anyone else."

Honeywell tries to appeal to a student's sense of adventure and dubs itself "The Problem Solvers". Logica, on the other hand, sends round to the universities a fat book which contains nothing but recent Press cuttings about the company's developments and activity over the past year.

The firm also sends a brochure containing case studies of what are obviously the cream of their employees, who all seem to be working in New York, Zaire and Helsinki within a year of graduating, although the introduction states that only "exceptional" graduates have the opportunity to travel so soon after joining the company.

Training, job descriptions and usually a brief introduction to computing are included in most company literature, often in question and answer form such as "What is software?"

Salaries are rarely mentioned in such publications, only to say that they are "competitive" or "constantly under review". However, graduates starting their first job in computing can expect to start on a salary between £4,000 and £4,500. This can be misleading, as companies compete annually to offer graduates attractive salaries.

ICL Training HQ at Beaumont, Windsor. This year some 400 graduates start their computer career here.

. . . and two points of view at an interview

WHAT do students and employers gain from all the trouble that has gone into arranging their meeting? Several of the students I spoke to as they came out of their first interview with ICL were still rather confused. They felt that there was little they could project in so short a time. And the interviewers, in their opinion, seemed to spend the time telling them about the company instead of investigating their potential.

Most were keen on a career in computing and had applied to most of the major companies, being happy to join whichever one offered them a job.

One zoology graduate wanted specifically to become an applications programmer, although many of the others were merely attracted to the industry because of the number of opportunities and highly-publicised recent technological developments.

Computer science graduates are more discriminating in their choice of employer and most favour the small software houses, which usually require qualifications in a numerate discipline anyway. Most large manufacturing companies offer a set graduate training plan which embraces all recruits irrespective of their degree subject.

Graduates in computer science usually feel that their talents and knowledge can be better utilised in a small environment where they can begin to be useful immediately without wasting time pursuing long introductory courses.

Most students, whatever their discipline, were against starting a computing career in the department of an industrial manufacturer, where they felt they could possibly get stuck in some large and impersonal programming department where they would not be exposed to a constant flow of new high technology products. This general atmosphere of excitement is one which seemed to attract students most.

When the interview sessions broke for lunch, most of the industry representatives met for drinks and lunch provided by the University Careers Service.

The ICL interviewers, a mixture of personnel staff, marketing managers and engineers, were adamant that they could decide even in a 20-minute interview if a student was ICL material or not.

One of the interviewers said "You can tell an ICL man right away. He's a certain sort of person and it's easy to tell if he is going to fit in."

Often these can be more for a new graduate than those being earned by a graduate who has been with the company since the previous year.

Many students are attracted to the industry by the money, which again seems presumptuous because on balance computing is no better paid at the bottom of the scale — and that is where graduates come in — than any other major industry.

Computing does, however, offer experience and training in many different skills and private development plans cover from two to three years joining the company. After the graduate can enter a marketing, systems and lecturing or research

As Kennath Dibden points out: "You don't plan a You choose employment stage a student can't plan path he is going to take for rest of his working life. It doesn't work out that we he can do is make a start."

Asked what sort of person thrown out even at this stage, one interviewer "Only the absolute rub The absolute apparently, are the comsocially inept who would difficulty finding any job

It must be remembered after this initial interstudents are invited to a open day at the company offices and have to undergo several more interviews, and observation before the job offer. Also, IBM ask make their offer final and conditional to degree pass even an academic failure find success through the graduate entry scheme of some largest computer companies

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SOFTWARE FILE FEBRUARY 28th 1980

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Puzzler

THE numbers 152,359,026 and 152,423,718 are consecutive squares. Your job is to find the next highest square,— without using tables or a calculator, and without doing any square-root sums!- So obviously there's a knack to it somewhere.

See page 61 for the secret.

SOFTWARE FILE

by Claire Gooding

SPL gets rights to message pack

SPL INTERNATIONAL has concluded an agreement with Plessey of New York for the marketing rights to a Tandem-based message switching package called QM3580. SPL is to sell, install and maintain the package in Western Europe and Scandinavia, providing modifications if needed, and supplying micro-based data line controllers.

The system uses IATA format and supports Telex, IBM 3270 and 3280, and Bell polling protocols at present. SPL will be extending it to cover the requirements of Electronic Funds Transfer systems and electronic mail, and will market it under the new name of Automatic Data Switch 385.

SPL hopes to find a market for ADS 385 among such areas as insurance and banking, airlines and multinationals. It will be sold either on a turnkey basis including Tandem hardware and other application software, which would cost roughly £200,000 upwards depending on the system size, or on a fixed price basis, for a licence fee in the region of £60,000.

CAFS beating IBM in reliability race

IBM seems about to shoulder a mighty sledgehammer to crack the software nut. The reasoning behind SWARD, or software-reliability-directed architecture, was explained by Glanford Myers of IBM's systems research institute at a recent Infotech lecture, to be greated by cries of "It's already been done" and the unsnswerable "When will it be available?"

Myers was addressing the problem of software development and how it could be expedited by more "sympathetic" hardware and architecture.

Among the major attributes of the proposed architecture were tagged, or self-identifying storage, nested tags, and simplification of data storage and access in such a way that the complications of the user environment are done away with (including linkage editors, control statements and the binding of programs to files), and the complexities of I/O drastically reduced.

It was quickly pointed out that some such attributes are already available on various hardware, not least ICL's 2900 series.

Although not on such a grandiose scale as SWARD, ICL's CAFS, Content Addressable File Store, challenges existing database restrictions, and is claimed to be 50 times faster than conventional access techniques.

CAFS allows parallel processing of up to 12 streams of data from different sources, and does away with the necessity of pulling an entire file off disc into memory in order to search through it for a few relevant items.

Self-identifying data and detailed matching by hardware makes this possible. Essentially, each field has a tag which is used by the hardware to recognise and match with the selection criteria. At the end of the search process, a microprocessor matches the relationship between the various criteria.

The searching is done in situ, and the CPU only has to deal with the relevant data, all other I/O being by-passed by the "intimate search" already done by hardware.

ICL envisages it as being a particularly valuable technique for any complex matching task such as staff placements, second-hand car sales, or even computer dating. CAFS was recently bought by De Beers' central selling organisation in London for its flexibility (CW, March 13).

The CAFS approach might not be the answer to all the software problems at present under the scrutiny of IBM Systems Research Institute, and it does not pretend to be. But it has one outstanding advantage over SWARD ... it's already available.

US court ruling could hit copyright protection

DETAILS have come to light of a US district court ruling which might affect copyright protection for software. The case centres on a product called Compuchess, sold by Data Cash Systems of Chicago, which is alleged to have been copied and sold by another firm in identical form as Chess Computer.

The court ruled that software incorporated into a read-only memory chip is not covered by copyright, on the grounds that any software in a form that cannot be seen and read by the human eye is not copyright protected.

Based on common law and the American Copyright Act of 1909 (both exclude "ideas" and anything that cannot be read from protection), the ruling means that the object code of any program would become vulnerable. According to copyright specialist Alistair Kelman, this would suggest that "the exporting of unsupported software to the US is a dangerous occupation".

International law on the subject varies. UK work is protected when published with the copyright symbol, even if not registered. In the US and the Soviet Union, which both signed the Universal Copyright Convention, some sort of symbol in the object code would be necessary.

A proposed regulation has already been drafted, suggesting that the chip itself might be stamped with the copyright symbol.

Other possibilities it proposes include the display of a copyright notice as a label on a container or on the screen of a VDU when the system is initially accessed. This method, with written-in protection, has already been used in sales of proprietary software from the UK to US companies.

DBMS for Eclipse users

A MAJOR release of software from Data General has added a database management system and an interactive query package to the software options for Eclipse users running under the Advanced Operating System.

The database package, DG-DBMS, was developed by Data General over a four-year period and adheres to Codasyl's 1978 standards.

Data General chose to develop its own DBMS rather than adopt an independent product partly due to the complexities of ADS, aiming to coax maximum performance from the system with the home-grown DG-DBMS.

Previously users were buying third party database products or using Data General's Infos file management system. DG-DBMS will be available in the UK at a first-time price of £6,200 and at £4,240 for a subsequent licence.

Cincom help for planning and controlling manufacturing

THE trend for systems houses to get involved with tasks outside the traditional DP domain has been furthered by Cincom, producer of the database Total, with its manufacturing resource planning system, MRPS, a big and complex software suite to plan and control manufacturing.

MRPS is an online system aimed at large manufacturing firms which need a master plan to control resources, co-ordinate the control of material requirements, stock capacity, orders, workload and related problems.

Cincom has put over $1¼ million into developing MRPS, and has built up the system over three years, releasing and field-testing each phase as it is completed.

The three major components of the system are master data maintenance, materials control and manufacturing resource planning. Further plans include master production scheduling and shop floor and purchase control.

Cincom claims that the cost of MRPS — from £24,000 to £91,000, or £990 per month on lease — is a fraction of the losses a large manufacturer can suffer through lack of detailed planning in wide-ranging operations. Several large organisations including makers of steel, chemicals, pharmaceuticals, and footwear, are already committed to MRPS.

The experience of one user of the system bears out Cincom's claim that it belongs to the manufacturing rather than the DP domain. The Manufacturing Material Planning module was released last year (CW, May 24, 1979) and Otis Elevator has been using it in a tightly controlled batch environment to evaluate production control and improve internal management.

According to Julian Levy, director of information and contracts at Otis, previous experience with other packages for the job had made the company wary, but it was impressed by the design approach and had a ready-made Total environment as well as inherent data disciplines on the factory floor.

Levy added that the benefits in delivery timing, flow of materials and labour efficiency would take time to show.

"We think we're doing it right this time," said Levy, "but ask us in two years' time!"

Payroll facility

HOSKYNS' payroll facility can be now implemented as a stand-alone system or as part of the MAS-M general accounting package which runs on Digital Equipment PDP-11s under RSTS-E and RMS11K.

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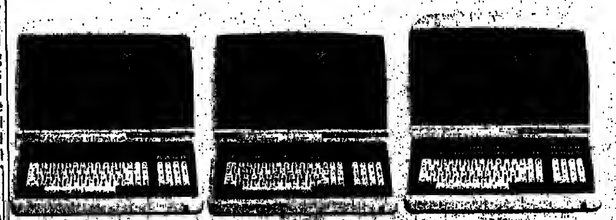

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TEXAS INSTRUMENTS LIMITED

OP SPOT — by Bernard Allen

What makes operators stay at an installation?

DURING my time as the Op Spot columnist I have been inclined to take the side of the operotor when considering all sorts of msttera relating to the highly demanding operations environment.

So I must admit to s morathan-slight twinge of conscience the other week on hearing nbout the Irouble a certsin operations manager was experiencing in holding nn to his ataff.

Over a very short period the poor man had lost four operators, and if it had not been for the services of contrnct staff he would hava to operate tha system himself — with the help of the DP manager, no doubt.

"Why do stuff leove my installotion? Whot can I do to hold on to them?" he asked.

My Immediate response was that operators go for many different reasons. But quite often they hnve just had cnough of the installation, and on sceing a better-paid position advertised in one of the computer trade pnpers, decide it's time to move on.

On reflection, I realised that my comment was a bit short and may have seemed flippant. That was unintentional. So for the person who telephoned me, and any other manager who is having difficulty in keeping staff, let's consider some of the things that keep operators happy.

Well, we live in o world of rising costs and prices, so a competitive salary is of prime importance.

Salary reviews should be carried out by the manager on a regular basis, and the best and most efficient operators should be rewarded accordingly.

Next come opportunities for career progression and the training scheme provided for the operators at the installation.

At the smaller site, the operators should have the chance of moving out of operations and into programming after two years or so.

At the larger installation, the best operators should be encouraged to consider such sreas ss technical support, systems programming or the TP section (provided the site has one, thst is).

The training acheme is of great importance. It should start with a course on bssic concepts, include hardware snd the operating system, and go right through to such technical subjects ss JCL writing, fsult diagnosis and dump cracking.

I have known operators who were really fed up with an installation to "hang on" for another six or 12 montha because they have been booked on to one or mora courses.

Such courses enable the nperators to get away from ahift work for a week or more and hava a taste of hotel life, as they often take place oway from the installation. It makes for a bit of n change.

The ottitude and approach of the shift leader can also have a considerable influence on the operator who Ia undecided whether he should stay at the installation or go to another.

One ahift leader I used to work with was far too easy-going, with the result that the operators liked rather thon respected him.

Another went to the other extreme and eamed himself some uncomplimentary nicknames — along with the grudging respect of his operators.

As I aee it, the shift leader must saek a balance between being the head of his shift team and stoying on good terms with the operators.

On the one hand, he must ensure that the operators get in on time, behave themselves in the computer room, and generally work as a team to meet deadlines and provide the best possible service to the uaer.

On the other hand, he must treat the operators fairly by reporting their complaints to the operations manager. He must also let the manager know which of the operators are best equipped to move into more technically demanding posts.

The shift leader who adopts this sort of approach is extremely vsluable and cannot be held responaible for staff leaving the Installation.

The manager looking to keep hla staff should not underestimate the Importsnce of the shift pattern employed at the site.

It'a a good idea to check every now and sgain that the operators are happy with the shift pattern and if the majority are not satiafied, to alter it, however alightly.

Take, for example, a site where the conventional eight-hour, three-shift pattern is employed. If a number of the operators have no transport and live a fair distance from the installation, then it might be better to start the day shift at 8.30 rather than 8.00.

Similorly, the evening shift should end in good time for the operators to get home by means of public transport if need be.

Even better, the aite might pay taxi farea for the evening shift team, snd the night shift when they happen to finish early.

Too often the operators get the work finished early on the night shift only to wait around for the day shift to report for work. In my opinion, two of three operators are quite enough to effect the handover.

The night shift also provides the operators with some free time. This is wasted if they don't have a decent rest room in which to spend it. It is extremely important that the operators have a place where they can unwind away from the noise and buatle of the computer room.

Facilities ahould also include a place where the operators can prepare and cook food when on the night shift. Some aites provide meala free of charge — that can't be bad.

Anyway, these are a few of the factors which will cause an operator to stay if the site has got the balance right — or leave if it hasn't.

"It's all right, they're just starting to negotiate who sits where."

Management course

BIS Applied Systems is to hold a three-day course on operations management.

Entitled Computer Operations — Planning and Management, it covers staff management, and financial planning and control techniques, and is intended for those about to enter operations management.

It takes place at the Queens Hotel, Eastbourne, from March 31 to April 2 and costs £300 per head. For details contact BIS Applied Systems on 01-633 0888.

Risks to installation security highlighted

THE sverage company has come to rely heavily on its computer centre. So much, in fact, that disruption there might result in great Inconvenience, loss of salea, or even force the company out of businesa.

For these reasons, far greater attention should be paid to data centre security, according to a portfolio by Auerbach.

Called the Data Centre Security Audit, it ia one of the March updntes to Data Centre Operations Management and highlights some of the riaks facing the average Installation.

The author points out that DP activities can be disrupted by intentional destruction or theft of files or equipment; by employee negligence; and environmental disasters, such as floods and fires.

He emphasisea the need to protect company data which more often than not has been gathered at considerable expense and would be very costly to replace.

The loss of marketing research data, for example, would lend to expensive field research nnd delays in production. Equally serious, it might fall into the hands of one of the company's competitors.

The dato centre manager and DP auditor should consider eoch major opplication and how the loss of service would affect the company.

After assessing how critical the main applications are, the next step in the audit is to use the information os a bnsis for specifying security objectives for the centre. This means establishing stnndards relating to power supply and back-up, thrent from fire ond water, access controls, personnel policy, contingency planning, insurance, ond so on.

The next step is to druw up a checklist of questions based on the centre's security objectives. Responses to checklist questions should be made by the centre msnager and other staff in the form of "yes" and ... and the validity of the ... should be checked by the auditor.

That informstion should be used as the basis of a chart ... marialng security weak... under the headings of the ... installation, DP equipment, data, softwsre snd documentation.

The security threat to ... these should be classed as ... medium, low or nil, and ... the following criteria

- Destruction — the ... of total loss of a DP asset ... intentional or unintentional causea, such ss fire, exp... sabotage or vandalism.
- Fraud/theft — use of ... an asset for personal gain
- Human error — loss ... mistakes on the part of ... employee.
- Disclosure — release ... motion to unauthorised ...
- Equipment fsilure — corruption of dsta ... from electronic or mech... equipment failure.

The security threats ... should be interpreted in ... the extra cost or loss of ... resulting from destruction ... dnmage to an ssset, reckon... to the time when the centre ... normal working order aga...

Further steps in the aud... the data centre manager ... DP auditor to deter... whether the security obj... drawn up at the beginning ... process sre, in fact, ... effective.

They then select sec... measures in line with co... policies and reduce the li... hood of risk st the lowest ... sible cost.

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'Increasing number of over-40s will use VDUs'

THE Computer Weekly issue of February 21 brought an ironical grin to the face of Max Froat when he turned to pages 8 and 9.

On page 8, Op Spot, he read comments by one Dylan Leggat to the effect that there aren't very many VDU operatora over the age of 40.

And on page 9 thare was a picture of a certain Wing Com-

Wing Commander Green of Organic Concentrates with his Ventek 1100./

monder Green, a peraon over that age, sitting at the VDU of a Ventek 1100 system.

Frost, of Bicestar commants, "Surely a caaa of Murphy's Law if evar I saw one, aa I would not deny, so far as computing is concerned, the fundamentol truth of Dylan Leggat's comment."

Leggat was, in fact, criticising the Optical Information Council's report, Visual Display Units: Their Effects on the Eye, which advocates the use of bi-focal, tri-focal and vari-focal lanses.

He pointed out that the human eye has an extremely efficient variable focua mechanism, and that these lenaes might even prove a hindrance to the person under 40.

With all that in mind, Frost goes on in a more serious vein, "However, as time marches on for all of us, I rather fancy that the number of over-40a using VDUs will increose, especially aa VDUs are becoming more and more a part of tha daily working acene."

Himself a waarer of bi-focals, Frost points out that the reoding aegment of hla apectaclea enables him to read comfortably at a distance of 10 to 12 inches, but they are not so good for viewing a VDU at a diatance of, aay, 12 to 14 inches. A aeparate pair of glasses is needed for that purpose, he reckons.

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Rapid Recall

THE EXPERTS

CII-Honeywell Bull ready to go it alone

Last Saturday, the French government's four-year support programme for the national computer manufacturer CII-Honeywell Bull, which is 53% French-owned, came to an end. A confidant Jean-Pierre Brulé, managing director of the company, gave the French weekly Ordinateurs a long interview from which we publish excerpts.

BRULE

THE international regulstions which preclude governments from giving preferentisl treatment to their nstional computer companies after the end of this year hold no fesrs for Jean-Pierre Brulé, msnaging director of CII-Honeywell Bull.

"The public sector will surely continue to have s purchasing policy," hesald. "The alternative is unthinkable. I am convinced that they will continue to use their enormoua purchasing power to the benefit of the French computer industry.

"The French computer industry includes several companies, of which ours is the biggest.

"We would therefore expect to remain o beneficiary of any purchasing policy, but only in a competitivs environment. We have never had the kind of situation they have in soma other countries where public aector contracts are placed without a prior competitive tender. In France there hss always bean competitive pressura and that will become more intense in the future, I think that is healthy.

"CII-HB hss never wanted any of its customers to feel that it has won the game before it starts. That kind of thing complicates our relationship with our commercisl clients and noone is more pleased than I am that it is at an end."

On the issue of direct aid to the computar industry, Brulé noted that the French government had decided to commit a further sum of 400 million francs to that — equivalent to about £45 million — and that the oim was to encoiroge the development of new applications as well as providing direct support.

"CII-Honeywell Bull csn continue to operate and to remain profitsble without any assistance at all. When it comes to support, we have a choice.

"We will presumably continue to receive contracta, and we will accept them wherever they match our business objectives."

On the controversial subject raised in the French Press of the possibility thot CII-HB might begin marketing IBM-compatible mainframes from Hitachi in the future, Brulé was non-committal.

"The rumours in the Press of an agreement with a Japanese company are totally without foundation," he sald. "We do not rule out mere marketing of a product, but we have not talked about it. But that is something quite different from collaboration. We collaborate with Honeywell, and have a free cross-licensing agreement which is to our mutual benefit.

"We already have parity with Honeywell in terms of research and development expenditure — in fact we spend slightly more — and we are catching up with them in terms of numbers of staff and turnover. In 1979, they were about 20% ahead of us, hut the gap is narrowing.

"Last year we did 53% of our business in France, and the reat abroad. We've never sald that the split was exactly 50-50, ond the French market has grown faster than the internationsl."

Asked about realignments between CII-HB and Honeywell in Europe, Brulé was vsgue.

"Directly or indirectly we cover the whole world. The markets with which we deal directly are vast and our sales teams do not feel at all confined. We do not aell directly into the English-speaking countries, nor into Italy, Jugoslavia, Israel, Iran or Japan — where we have licence agreements.

"I've seen the idea that we should take over HIS-UK nnd HIS-Italis floated in seversl publications, but I know of no concrete foundation for these proposals."

Asked whether he expected CII-HB to remoin ahead of Siemens in the Europesn market despite the industrial power of the lutter, Brulé evsded the question.

"Siemens has grown rspidly, it is true," he ssid. "Nevertheless, it is still behind us in terms of msrket ahsre and turnover. I'm cautious about putting figures on these things, but they must be about 30% smaller than we are.

"ICL is much closer to us in terms of turnover. Indeed we are so clnse to each other that we can pass them one year and they can overtake us the next aimply as a result of exchange rate fluctuations. Clearly our objective is to be and to remain number one in Europe."

Brulé wss cautioua about committing himself to collaboration with other Europenn companies.

"We have done aeveral things in this oreo. For example, although we build our own minicomputer, the Level 6 developed by Honeywell, we use Mitrn minicomputers from SEMS in our bnnking terminals. And because of our success with the former CII Iris line, we have given the Toulouse factory taken over by Thomson, which builds the machines, far more work than we envisaged in 1976.

"As for collahorution with other European suppliers, I think there is more that we can do, but nobody would want to revive a grand collaboration like Unidata."

Brulé identified five fields in which CII-HB intended to expand. It now has a controlling interest in microcomputer speclalist R2E; it is marketing a word processor and has already won 10% of the French market; ond it is also seeking to expand in computer-aided design, computer-assisted learning, and in peraonal cards incorporating a microprocessor for banking and other applications.

He did little to diaguise his glee over the discomfiture of IBM France. "The complaints from IBM people in the Press are very uncharacteristic of the company, and they indicate to me that they have been hit by our success. It is interesting that they have gone on the defensive, because I remember that in 1964 when Mschines Bull was in difficulties, IBM was concerned, saying, 'We must have some competition.'

"I don't know whether that sentiment reflected the true feelings of the people who expressed it, but I much prefer to hear the complaints they voiced last year, because they indicate that their wish, real or imagined, for competition has been granted!"

Parts shortage a problem

THROUGHOUT the interview, Brulé expressed great confidence in CII-HB's financial standing and prospects, welcoming in particular the advent of the industrial conglomerate St-Gobain-Pont-à-Mousson as a major shareholder. One problem which has hit the company, however, is the shortage of semiconductors, and Brulé touched on the subject of going into component manufacture.

"Orders in 1979 were 33% ahead of those for 1978, which has been a very good year. But in the short term we face the problem that we cannot deliver everything we sell, because of the temporary shortage of components."

Brulé did not rule out the possibility thot CII-HB would have to manufacture, or at least do everything except the final processing of, very specialised circuit chips.

"We have found three suppliers, one American, one Japanese and one European — RTC, the Philips subsidiary — for special chips for our new DPS/7 line. As you go to higher levels of integration, machines could have as few as one chip of a particular type in them, so that even if you build 5,000, that is a very small production run and something that specialist chip manufacturers would not want to do."

He suggested thot CII-HB might have to install automated equipment for chip design in the future, and expressed views which match very closely those of ICL on the subject.

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PEOPLE and EVENTS

Young Brain of the Year

SEARCH for the Young Computer Brain of the Year is now on.

Sponsored by the Sunday Times Magazine and Commodore Business Systems, this new annual competition aims to encourage young people to devise ways of using computers for the benefit of society.

Organised in association with Boroness International, the competition is divided into three categories of entry and entries must be in the form of project essays outlining the proposed application.

The prizes, donated by Commodore, include £500 or a Commodore Pet microcomputer for the winner of each class, and £250 or a Commodore Pet 8K microcomputer for the second in each class.

The overall winner will receive an extra £1,500 and a specially designed trophy.

Closing date for entries is August 30.

Perkins

Harper

IEE secretary to retire

SECRETARY of the Institute of Electrical Engineers for 18 years, George Gainsborough is to retire at the end of May.

He is to be succeeded by Howard Losty, managing director of GEC Electronics. Losty was made a director of GEC Fairchild in 1978 and was elected a fellow of the IEE in 1974. He is a member of the Electrical Technology Requirements Board, the BBC Science Consultative Group and the Joint Industry/Academic Board responsible for the four-year course in Engineering at Imperial College.

Directors appointed at Geest bureau

EASTERN Computer Services, the Peterborough-based Geest computer services bureau, has announced the appointment of Les O'Reilly as managing director. Colin Read, formerly sales manager and Keith Jolly, who was previously data centre manager at ECS in Peterborough, have both become directors of the company.

Jim Kane of VLI has become head of all group systems and programming staff businesses known as Computer People. Work People, a new division within VLI, will be run by former managing director of CoOperators, Clyde Perkins.

Margaret Harper has joined CMC's technical support department at the Bristol office where she will be involved in training. She joins as a graduate from Southampton University.

Brian Burke has become sales executive with Sigma Electronic Systems. He formerly worked for Tektronix.

Valerie Barnes has joined Lowndes-Ajax Computer Service as a sales executive. She was previously with the Civil Service in Chessington in the internal audit section.

Jim Baird has become marketing manager of AVX, the multilayer ceramic capacitor manufacturer. He was previously with ITT.

Mike Dailey has become field sales manager to head Euro Electronic Instruments' new computer peripheral division. He was formerly technical sales manager with the company.

Geoffrey Griffiths, a former Southern branch manager with Redifon, has become marketing manager of the UK operation division of Arbat (UK).

Alan Hicks has been appointed sales manager at Business Computers (Systems). He was formerly an account manager with Unilever Computer Services.

MICROPROCESSORS were in the news again when the BBC's lunchtime programme Pebble Mill at One featured two Honeywell Control Systems products in the show's weekly energy spot.

Energy consultant Geoffrey Pardoe explained the operation of Honeywell's microprocessor-based Optimiser optimum start and stop control and the [illegible] 1000 building management system during an interview with programme presenter [illegible] Foster.

On camera in our picture (left to right) are Marion Foster, Geoffrey Pardoe and Honeywell's Tony Orey (seated).

Jerry Goldman has become City branch manager for Tymshare, the computer service company jointly owned by Unilever and Tymshare of California. He previously spent 11 years with IBM in Israel and the UK.

Robert Sorenson, president and chief executive officer of Perkin-Elmer, has become chairman of the board. Horace McDonell becomes president and chief operating officer.

David Coleman has been appointed general manager of Courier and Data Transit. He was formerly an engineer with Bewac.

Chuck Deeny has become the director of business development for Execucom Systems Corp. Until recently he was manager of special projects for Selscom Delta.

First round of National Game

FIRST round of the 1980 National Management Game has been completed. Over 500 [illegible] took part in the round and 202 winning teams compete in the second round, which is held in March and April.

The game, now in its [illegible] year, is sponsored by the Institute of Chartered Accountants, ICL, the Financial [illegible], the CBI and the Institute of Directors.

Competition continues on a "knock-out" basis in this computerised management [illegible] through a further three [illegible] until four teams are left to compete in the London finals [illegible]

DIARY

MARCH 21
The economics of using APL. UK APL user group. Read Lecture Theatre, Imperial College, London. 14.00.

MARCH 25
Data processing in the retail trade. BCS South West group. Bedford House, Park Street, Taunton. Contact branch secretary.

MARCH 27
How to choose a computer. BCS New or Potential group. University of Aston, Birmingham. Tel: 021-278 0281.

MARCH 27-29
The changing balance of man/technology. Institute of Administrative Management. Bournemouth. Details: 01-658 0171.

MARCH 31
AGM of BCS Fortran specialist group. BCS HQ, 13 Mansfield Street, London W1. 10.30. Tel: 0533 554455 ext 165.

APRIL 2
Compiler design and development. BCS Croydon branch. Fairfield Halls, Croydon. 1915.

APRIL 9
Distribution networks. BCS North London branch. West Lodge Park Hotel, Cockfosters. 19.45. Tel: 01-446 1313.

APRIL 10
Money transfer — Swift. BCS West Herts group. Ashridge Management College, Ashridge. Tel: Colin Scott on Berkhamstead 73151.

APRIL 15
Communications user forum. BCS Data Communications Specialist group. Grand Hotel, Birmingham. 09.30.

APRIL 15-17
IBM CUA forum. The Royal Bath Hotel, Bournemouth. Tel: 01-551 1643.

APRIL 23
'Participative design' — a constructive appraisal. BCS Human Aspects of Computer Usage Specialist group. Bloomsbury Centre Hotel, London. 09.00.

APRIL 30-MAY 1
IBM CUA Series 1 group. IBM Havant and Royal Beach Hotel, Southsea. Tel: 01-551 1643.

Liveware File by [illegible]

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(Applications received after April 8 cannot be accepted)

Exxon sales force for office products

A SINGLE marketing organisation for the whole range of office systems products being made by subsidiaries of Exxon is now being set up, having been suggested over two years ago. The as yet unnamed organisation is being headed by Bob Contino, who recently joined Exxon from IBM. Included in the marketing effort will be electronic typewriters from Qyx, word processors from Vydec, and Qwip facsimile machines.

These are all fairly small companies constrained at the moment by their lack of sales outlets, so the central sales force should help considerably in their growth.

Office systems form one of four business lines under the Exxon Information Systems banner. The others are components, communications systems, and computer systems.

Another company in this area has been set up by Exxon Enterprises, in Princeton, New Jersey. This is called Xonex, and it is doing research and development into software for future office products. No products are being worked on at the moment, but development is being done of software techniques and support systems that may be required in the future. Three staff have recently joined Xonex from RCA.

TWO supermarket groups, International Stores and Sainsbury, are evaluating laser-scanning equipment at selected sites.

Both companies are initially using IBM retail systems, but Sainsbury has said it will eventually switch to an NCR 1255.

Fourteen laser-scanning check-outs have been installed by International at its Folkestone superstore and the two IBM 3651s there are handling price look-up functions for about 8,500 products. Bar-coding on each item, whether manufacturer marked or marked internally by store staff, is scanned by the check-outs and totalled by the computer. Transaction details are sent daily for batch processing to IBM's Warwick bureau. Eventually International hopes to process transaction data on an IBM 3031 at its head offices in Bracknell.

Sainsbury has about 8,800 product prices being handled by an IBM 3660 retail system in its Broadfield (Crawley) store.

The move to NCR retail equipment is expected later this year but meanwhile, its transaction processing is also being handled by IBM in Warwick.

● Our picture shows laser scanning at Sainsbury's Broadfield branch.

NEWS IN BRIEF

Micros for doctors

MICROSYSTEMS for the medical profession are to be marketed by a new company called Medicom, formed by microsoftware specialists Adda Computers.

Medicom's first product will be a Commodore Pet-based patient records system called the Practice Monitor. It has been designed specifically for GPs and handles analysis of patients by age, sex, disease and treatment given. It comes with 32K main memory, a cassette deck and 10 blank cassettes for £1,310.

Into Europe

TELEX, which sold the European side of its IBM-compatible peripheral marketing operation to Memorex two years ago, is moving back into Europe as an OEM supplier. Based at the Ealing, West London, offices of Telex subsidiary General Computer Systems, Telex Computer Products will start by selling a 19-inch rack mountable 6250 bpi tape drive called the Mini-Tape 6250.

Lion discount

DISCOUNTS of 15% are now available on kit sold by Lion Micro Computers of Tottenham Court Road. The offer lasts until April 5 and covers the Commodore Pet, the ITT 2020 and the Sharp and North Star microcomputers.

Infonet extended to Hong Kong

INFONET, the remote computing service, is to be extended to Hong Kong this spring. Computer Sciences Corp of El Segundo, California, which runs Infonet, has signed an agreement with Chartered On-Line, a jointly-owned subsidiary of the Chartered Bank of Hong Kong and two local trading companies, for local marketing and technical support of the service.

Agent in France

SYSTEMS Industries (Europe) of Woking, Surrey, the European marketing arm of the US-based minicomputer disc systems manufacturer, has signed up Generim SA as its exclusive agent in France. Generim is a subsidiary of the French electronic equipment distributor CDME.

Picture demo

PICTURE PRESTEL is to be demonstrated for the first time in public at Viewdata 80 next week at the Wembley Conference Centre. The Post Office has developed the system to allow pictures to the quality of a normal colour television picture to be used for mail order catalogues and classified advertisements.

Other languages

THE DMS Display Management System on the IBM 8100 is to support other languages as well as Cobol. Designed for online program development, DMS was hit by the Cobol compiler delay (CW, November 15, 1979).

Butler Cox to issue 10 reports on viewdata developments

BUTLER COX, the London-based market research firm, is planning a series of 10 reports over the next two years to examine the experiences and plans of organisations involved in developing viewdata systems.

Designed for organisations which might want to operate in the viewdata market or use a system to improve internal information handling, the reports aim to identify trends in the worldwide viewdata market, covering residential and business markets for both public and private systems, and to make predictions of developments over the next five years.

Butler Cox has produced two previous subscriber-backed reports on the impact of viewdata in the US and in Europe.

IBM offers free seminars to Civil Service

FREE, one-day seminars on how and where its systems are used in government are being offered to Civil Service staff by IBM. But the company has denied that it is seeking to take advantage of the ending this year of the government's ICL preference policy (CW, February 7).

Advertisements in three Civil Service journals invite interested staff to fill out and return a coupon to reserve a place at one of the planned seminars, to be held in London on March 20 and April 30. By doing this they will also receive a copy of an IBM publication, Links With Government, which has been prepared for the seminars.

"We are not doing anything new," explained an IBM spokesman.

Credit agency £1m Burroughs order

AN ORDER for a dual Burroughs B6800 Global Memory System with 6 megabytes of main memory and 8,400 megabytes of disc storage has been placed by the United Association for the Protection of Trade.

The credit information agency will use the system, which is valued at over £1 million, to help with the 10 million credit authorisation inquiries it receives each year from its 11,000 members.

£900 saving

A SAVING of £900 on 128K-byte memory expansion boards for the Hewlett-Packard 9845 microcomputer system is being offered by Abacus Computers. Its price for the board is £2,700 compared with the HP's £3,600.

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MICRO NEWS

by Martin Banks

Schoolchildren need a broader understanding of computers—MP

THE need for children to have n bruad spread of understanding of the use and application of computers was emphasised several times last week by Gary Wuller, Conservative MP for Brighouse and Spenborough, at a meeting of the Computer Retailers' Association.

He had been asked to address the association's membership because, according to CRA chairmon Tim Keen, it is now starting to mount n campaign to extend both the use of micro-computers in education, and the ways in which it can support increased use nf computer-based educational systems.

Waller stressed that it woa vital for children to hnve at least n basic understunding of how computers operated if they were to be nble tn enpe with work and leisure in the future. Not all children, he said, would be obie tu make the grode os programmers, analysts and other computer-oriented specialists. However, many children would in the future have to work with or around computer-based systems, and an understanding of how they operated must therefore rupidly become on integral part of their cducation.

Such on understanding would also help overcome the current problems of inflexihie attitudes to the type and location of work, he soid. "Children must get used to the idee of heving a flexible attitude to what type of job they do."

Tha MP welcomed the money that has just been made available for micro education in schools, but said that he personally felt that £9 million over a fnur-yenr period was too little to spend on such nn importent suhject. It would not be enough to ensure that all schoolchildren had access to sufficient facilities for them to gain experience in computer operotion and use.

"The money is un investment for the future," he aaid, "and more should be made available."

In terms of employment, however, it was a future that was hord to predict, especially for tha layman. Waller talked of the contradictions that had been presented over the recent past in the various statements nnd reports on the implications for future employment of the application of microelectronics.

He quoted as examples the statements of Professor Tom Stonier of Bradford University, who haa predicted that in the future all the country'a manufactured goods will be produced by just 10% of the labour force, and compared it with the Rothschild report, which has put forward the idea that the application of new technology will lead to the creation of many new and aa yet unidentified jobs.

For politicians to formulate constructive policiea to deal with these possible futures was difficult, he said, because they liked to work to five-year plana only.

He does see, however, a strong place for the UK ea a base for the development of new microelectronics-based products and aystema. "I see this country as being well-equipped with the potantial skills," he said.

The HP-85—fine for scientists, but "useless for small businesses."

Panasonic's new system

Hara ia ona of the first sights of tha new National Panasonic microcomputer system, which is just bacoming available in this country.

Ona company already working on software support for the system is Phipps Associates, a new consultancy operation started by John Phipps, who used to be with Hoskyns Systems.

Ha has developed a fully monitor software package which handles all operator communications with the system, and checks all keyed input data before passing control over to the application program. It also provides an enhanced screen editing facility. The package can be interfaced with either the CP/M or the operating systems provided in the system.

Mixed reactions from industry on first H-P personal machine

THE first personal-size computer from Hewlett-Packard, the HP-85, is eliciting a mixed reaction from potential uaars, computer retailera and industry obaervers. Although the mechine garnered some initial praise from all concerned camps, the 85 may not be all Hewlett-Packard would like the public to balieve, *writes Hesh Weiner*.

The HP-85 features 16K-bytes of read-write memory, e five-inch black-and-white display, a four-inch printer capable of two 32-chorocter lines per second, a keyboard with a 20-key numeric pad and a weelth of soon-to-be-announced peripheral options. According to the company, the 85 is designed for angineers, scientists ond financial professionals.

While HP pats itself on the beck for a job it considers well done, e rumbling hea arisen among computer retailers, experts and users who are having second thoughts on the 85.

The main source of complaint from usera is the current dearth of software for the 85. HP says it will unleash a load of softwore within the next six months. In the meantime, programming is, es one New York retailer put it, a "do-it-yourself job".

For the most part, users must now depend on local retailers to come up with software applications. This, in turn, has caused some concern among retailers; the retailers themselves oftan do not have much programming ability. In addition to knowing the mechanics of programming, the aoftware vendors must be familiar with the user'a needs. For axample, in order to design a financial applications program, the programmer must know, in addition to programming, aconomic theory and general business practicea.

HP says thet it ia aelective in choosing dealers who will carry the 85. According to Carmen West, HP product manager, the company signs deals with only thoae retailers it balieves can offer e sufficiently high level of customer servica end support.

To be chosen by HP is an honour, according to West, end none of the retailere HP epproached has turned down its offer to sell the 85. But some retailers aay that their enthusiasm for the new machine is now tempered by dissatisfaction with HP's pricing regulations.

HP is allowing retailers a 25% profit margin on the 85. The machine's US list price is $3,250; the retailer'a 25% comes to $812.50. Jim Crimaldi, vice-president of Super Business Machines, a New York City retail store, says "the mark-up is just not enough." Crimaldi adds thet "lots of time" is needed for sales assistance to 85 customers. And thet, he adds, costs money.

In addition, some retailers have pointed out thet the small profit margin prohibits them from discounting the 85 below the suggested list price. Despite complaints from retailers, HP does not aeem overly concerned. "We don't feel thet the 85's price mergin is detrimental to the mechine's commercial success," says West.

"Besides," she adds, "the percentage is not the whole story. There is also the reliable, high quality service and support HP offers its dealers."

Profit margins on HP's desk calculators are obout 28%. Many retnilers feel that this ia also insufficient. But these calculatora, despite high prices and stiff competition from Texus Instruments products, nre not without a group of foithful "HP fans". According to one computer retailer, HP is hoping that the 85 will attract a similar kind of following. "HP has a group of customera who huy onything the company comes out with," one retailer explains.

Aside from price and software problems, some computer experts wonder if the 85 deserves the attention it is receiving.

"The 85 may be impressive today — but it won't be for long," aays Dale Kutnick, consultants Yankee Group, "in a year or two," he explains, "it is going to get clobbered by the Japanesa, who will have machines for the same price."

Citing the 85's small screen and printer, Kutnick says the computer is "useless for small businesses". According to Kutnick, the current standard for displays is 60-80 characters per line and 12-24 lines per screen; on both measures, he adds, the 85 falls short.

Kutnick also doubts the wisdom of HP's marketing strategy for the 85. "HP is chasing a market that is unlikely to show growth. I think the company is showing short-sightedness," he says. Kutnick adds that the machine will only appeal to accountants, engineers and scientists. This market, he says, will prove to be much smaller than that for HP calculators.

Although some retailers say they have sold 85s for home use, Kutnick says the machine is already over-priced for success in the home market. "Anything over $1,000," he says, "is just too expensive for the personal, home-use market."

Despite their complaints, dealers do say that initial interest in the HP-85 is strong.

Cross assemblers

TWO cross assemblers, ona for the MOS Technology 6502 and the other for the Motorola 6800, have bean launched by micro-software specialist Lifeboat Associates. Each supports tha manufacturer's mnemonics and is designed for use with the CP/M operating system, so allowing microprocessor software development to be carried out on a personal computer.

Based on the Vector Graphic

A NEW company apecialising in systems based on the Vector Grephic microcomputer system has been started in Crowborough by Bob Rohinson, lete of Jermyn and Rapid Recall.

Called R-Squared, the company will be aiming to sell primarily to OEMs operating in the induatrial control and small business ayatems market. To this end, a wide range of languages for the ayatem will be available, including APL, Pascal, Fortran, CIS Cobol and Basic, as well as assemblers end editors.

Hard disc system

A 20-MEGABYTE Winchester technology hard disc system has been introduced into this country by Dakstate, for the recently launched Findex portable microcomputer syatam (CW, January 17).

The diac system is being pricad by Dakstate, UK distributor for the Findex machine at £3,500.

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Computastars moves into Europe for the regional heats

COMPUTASTARS 1980 ia now ready to test the skills and energies of the computing industry's sporting enthusiasts, not only in the UK, but also in Holland.

Five regional heats have been arranged Cleckheaton on April 27; Birmingham on May 4; Barnet on May 10; Arnhem on May 24, and The Hague on June 14.

Winning teams from each region, guest teams from other European countries, with last year's winning teams — the ladiea of PMSL and the gentlemen of the London Borough of Lambeth — will compete both for their national titles and the European title of Computastars at the Alexander Stadium, Birmingham, on Saturday September 13.

The principal aim of Computastars remains the same: to find the bast all-round teama, although again there will be recognition of individual talents.

To provide flexibility at the regional heats, and alao at the finals, events may vary. The aim of the variation is to ensure that the teama chosen are of a genuine all-round nature.

As with previous Computastars, the aim is friendly competition based on a wide variety of skills. The attitude of all competitors playa a significant part in the enjoyment of both teams and spectators.

Because the competition will be run in two countries, it has been necessary to cut down the number of heats in England and, in these, entry is limited to one male and/or one female team per unit, as defined in the eligibility rules. Acceptance of teams per region will be limited to 28 male and 20 female. Once these places have been filled, no further acceptance of teams will be made end applications will be returned.

Should teama wish to indicate an alternative region, they may do so and acceptance will be made subject to first and then second choice availability of places.

Teams that wish to compete outside their own country mey do so, but conditiona and entry fee appropriate to that country will apply.

The principal aupport for Computastars 1980 comes from Computer Weekly in England and Computable in Holland, which will report on meetings and publish up-to-date information throughout the competition.

ENTRY FORM

We have read and accept the conditions of entry for the Computastars 1980 competition and would like to enter .... men's teams .... women's teams

Name of unit ....

Company ....

Address ....

....

Name of contact for team(s) ....

Telephone No. .... Extension ....

Signature of manager in charge of unit ....

Position held ....

The unit would like to compete in the following region: NORTH (Cleckheaton) MIDLANDS (Birmingham) SOUTH (Barnet). Please circle appropriate region.

Enclosed is £.......... to cover the entry fees for the team(s) payable to COMPUTASTARS LTD.

In all matters relating to the rules, conditions of entry the decision of the organiser is final.

Please send entry form and entry fees to COMPUTASTARS, 117b High Street, Croydon CR0 1QG. Telephone No. 01-688 6690

GROUND RULES OF THE COMPETITION

TEAMS will consist of no fewer than three and no more than five people, not mixed male and female.

Each team is required to nominate a No. 1 competitor who will, as well as being a member of the team, compete for the individual title.

The competition will be run in two sectiona, Ladies and Gentlemen.

At leaat the winning teams (more dependent upon number of entries) from each region will be invited to participate in the National Finals.

Normally tha regional heats will consist of a preliminary round and a final to be held on the same day.

Neither the events nor the style of the competition (team v team on a knock-out basis or points for excellence of performance (decathlon style)) will be published until the day of the competition.

Each team must provide a marshal — not a team member — who may be required to assist in the smooth running of the competition. Failure to provide a marshal for each round in which a team competes will result in penalty points being deducted.

In each event in each round three members of the team will compete, the nominated No 1 and any two of the remaining team members selected by the team captain.

Should the No 1 be unable to compete after being nominated — normally two weeks before the regional heats — then the team captain will nominate a substitute from the remaining team members. If the substitute for a No 1 is nominated after the first event of the competition has started then neither the No 1 nor the substitute is eligible for the individual title.

If the nominated No 1 ia substituted he may not take part for the remainder of the day.

Teams will be allowed to make only one substitution from the nominated team. This substitution must be notified to the organisers on the signing in of the teams on the day of the competition.

Failure to comply with the nomination of teams and the rules of substitution will result in immediate disqualification.

Each round on the day of the competition will normally consist of four events. These will be:—

1. A running event any distance up to a maximum of 800 metres per individual, and may include hurdles.
2. A throwing event.
3. A kicking event — any number of categories which demonstrate foot co-ordination and skill, target shooting, penalties, dribbling, rugby drop kicks, etc. Hockey may be included in this category.
4. Gymnastics.

In any event teams may be required to run the event as a relay. Running order will be at the discretion of the team captain.

The team captain must be a member of the team, and with regard to team selections the organisers will recognise only the team captain's selection.

In the case of a dispute, the team captain and only the team captain will have the responsibility of representing his team.

At all times the referee's decision will be final, not subject to appeal.

Who can take part in games

ONLY personnel who are fully charged to data processing departments are eligible to take part in Computastars.

Only personnel who have been employed by their present company prior to February, 1980 can represent that company.

Should a competitor leave the employment of the company which he represents then he will no longer be eligible to represent that company after the date of leaving the company.

Teams may consist of members of a company drawn from different locations.

Standalone computer units of more than 100 personnel shall for the purposes of the competition be regarded as separate companies.

Contract staff may be used subject to the qualifying conditions.

Once a person has been nominated for a specific team he or she may not represent any other team in the competition.

Once a team entry has been accepted there will be no refund of the entry fee.

All costs incurred by teams are the teams' responsibility.

All competitors participate at their own risk and the organisers do not accept any responsibility for any injury or loss of personal or company property.

All entries must be signed by the data processing manager or an equivalent authority.

The closing date for entries is March 31, 1980. No entries will be accepted after that date. All entries must be accompanied by an entry fee of £20 per team.

The organisers' decision will be final on all matters concerning the competition.

DOWN, DOWN DOWN

Prices are down in Sintrom's spring sale of Vector Graphic microcomputers. Sintrom, the longest established agents for Vector Graphic in the UK, are offering savings of up to £545 on selected systems for a limited period only.

Vector Graphic MZ
- S100 bus • 56K bytes of RAM • 4 MZ Z80 microprocessors
- 630K twin minifloppy drives • 1 serial 2 parallel ports
- Complete with MDOS/BASIC software.

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NOW ONLY £2100

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HURRY
This offer is limited to a total of 100 microcomputers, all of which carry the standard Sintrom 12 month labour and parts warranty. A comprehensive range of commercial software is also readily available.

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SINTROM GROUP

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Tel. Reading (0734) 85464
Telex 847395

CRA

INDIAN SCENE

Report by Tim Palmer

Among the most thrusting end embitious of the new Indian computar end computer services companiea is Datametics Conaultants of Bombay. Under the energetic leedership of its president, Dr Lelit Kenodie, Detemetice hes forged close links with one of the fastest growing compenies in the world, Wang Leboretoriee.

Bombay systems house sets up links with Wang

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Since the aim is to export the service, it would be appropriate to site the operation in SEEPZ, the Santa Cruz Electronic Exports Processing Zone, where low rents and on-the-spot Customs make operating attractive for companies manufacturing or providing a service which is 100% for export.

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The new mood ... late for IBM ... ICIM, the India... which ICL has ... is due to manu... 2904s in ... 30 financial ...

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They include:

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Control Data Corp.	Pragma
Datum Electronics	Quest Automation
Detac	Reck-Data
Data Dynamics	S.E. Labs (EMI)
Data Recording Co.	SEN Electronics
Data Resources	Sintrom Electronics
Delta Data Systems	Techex
Euro Electronic Instruments	Teleprinter Equipment
Feedback Data	Wessex Electronics
Festcol	3M's
Geveke Electronics	Trend Communications
Globe Computing	

Presented by the Peripherals Suppliers Association and I.P.C. Electrical-Electronic Press Sponsored by Systems International with the support of Computer Weekly and Data Processing. Dorset House, Stamford Street, London SE1 9LU.

KEITH JONES VISITS THE SPECIALIST MICROGRAPHICS SHOW AT WEMBLEY

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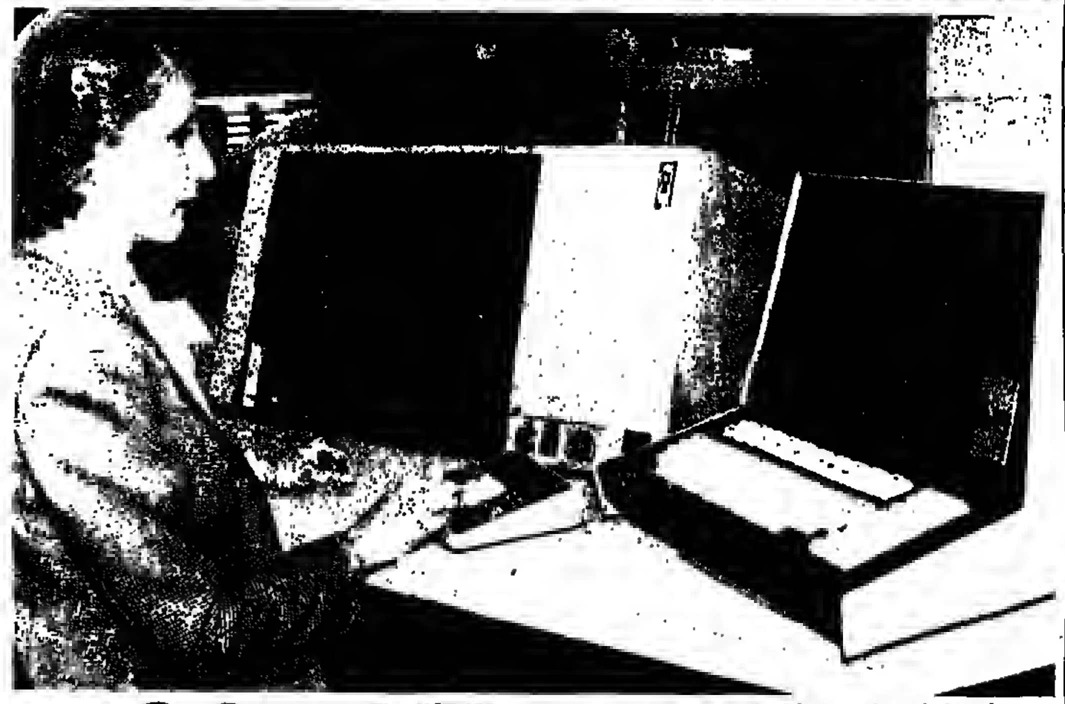
Lasers in limelight at Microforum 80



The IMT-150 microimage retrieval terminal is seen here being demonstrated on the Kodak stand at Microforum. It can be linked via the VDU on the right of our picture to a host computer holding files of data captured from each source document after it has been given a frame number and microfilmed.

The frame number is captured along with the rest of the data, so if the operator enters data relating to the source document required the host computer can find the relevant frame number and automatically transmit it to the microprocessor controlled automatic retrieval system which forms the main part of the IMT-150 system.

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LASER technology is pervading mony areas of information processing these days, including micrographica, so it was not surprising to find several laser based products at Microforum Europe 80.

Imtec, the UK microfilm equipment group that builds the majority of the products it sells, was showing the MLP-1 computer output microfilm recorder from another manufacturer, Laser Scan of Cambridge.

Imtec, in addition to Laser Scan itself, is now marketing the MLP-1. The main feature of the system is that it can reproduce an intricate drawing on a 35 mm film frame using a unique laser technique.

The MLP-1 is aimed at users prepared to spend about £45,000 on a much faster alternative to a high quality flat bed plotter.

Configured around a 16-bit Texas Instruments 9900 series microprocessor, the MLP-1 uses a laser produced by a helium neon source and controlled by a fast X-Y deflection system to generate drawings in up to two minutes with 256 grey acale levels.

The MLP-1 can be linked to a host computer via RS 232C or 20 mA interface. Software drivers for Digital Equipment PDP-11 and Prime hosts alreody exist and Laser Scan says that drivers can easily be written for other machines.

Ferranti Cetec at Edinburgh is a Laser Scan customer which incorporates the MLP-1 in the Clumis systems that it supplies to end users for cartographic and engineering design.

The MLP-1 is one of the products to be sold by the US sales operation now being set up by Imtec with officee at Summerdale, New Jersey. It will be exhibited by Imtec at the National Micrographics Association exhibition in the US next month.

An alphanumeric COM recorder employing laser technology, the Kometar 300, was one of the star exhibits on the Kodak stond.

Komstar can generate 16 mm film or 105 mm microfiche ond one of its higgest attractions must be that it uses a laser sensitive film that requires no wet chemical processing. This dry technique makes the Komstar much more like a proper electronic computer peripheral than older types of COM recorder. The Komstar is a standalone unit with its own controller.

A COM recorder designed specifically for online operation with an IBM mainframe was a product that NCR salesmen on the company's Microforum stand were rendy and willing to discuss even though it was not on show. The 643-1020 recorder has not yet been formally launched in the UK but, said NCR, units can be shipped to customers who wont the machine.

The 643-1020 can produce titled, indexed, cut and dried microfiche from print files or directly from Sysout data streams.

Software developed by NCR interfaces with the DOS, DOS/VS and OS/HASP/JES spooling systems. The 1020 itself incorporates a 16K-byte buffer that cnn store a complete page of data and the dota throughput varies from 50K to 500K characters per second depending on the channel.

For most potential COM usera an in-house mochine cannot be cost justified ao they have to go to one of the collection of COM bureaux dotted around the country. Harlow, Essex, ia the location of RHM CentreCOM, one of a handful of COM bureaux thnt appeared at Wembley.

RHM CentreCOM wos talking about the new graphica earvice based on its 3M BetaCOM recorder at Harlow. Like tha Laser Scan MLP-1, tha BetaCOM films on to 35 mm framea but it uses the more conventional CRT and stroke vector technique for generating the drawings. RHM said that tapes formatted for Calcomp 900 series plotters could be run on the BetaCOM without any chnnges.

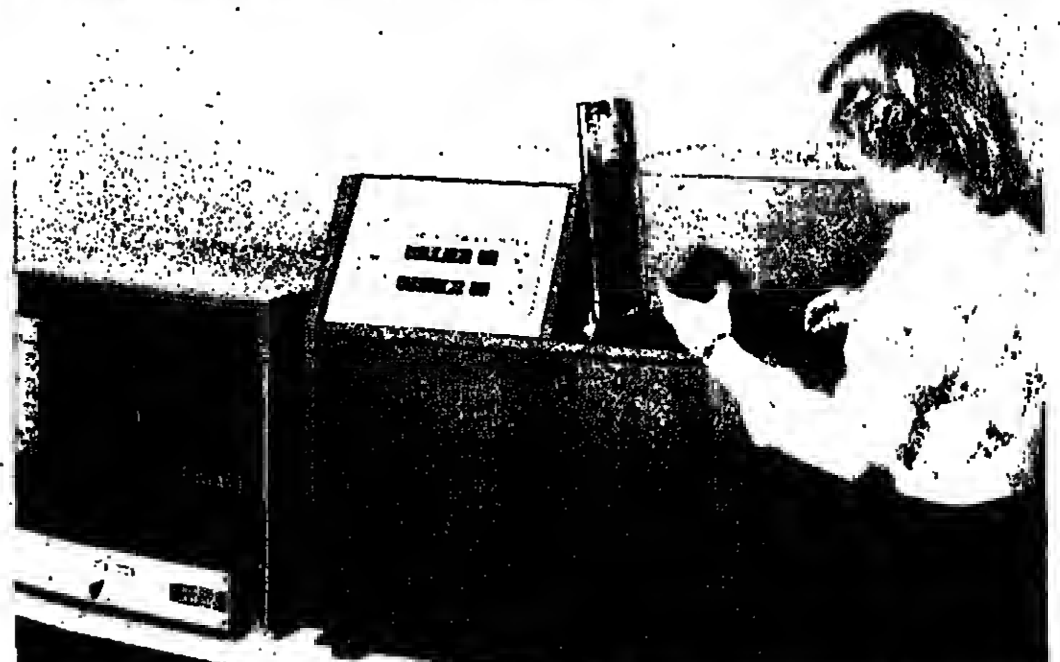
For commercial applications, alphanumeric data and simple graphics like bar charts can be mixed by the BetaCOM on the same microfiche and even on the same frame at reductions of 42 or 48 times.

The same can also be achieved at 24K reduction on 16 mm roll film. If required a dozen or so 35 mm frames can be created on the same 105 mm fiche at reductiona of 9 or 12 times.

RHM pointed out that only about 10% of its COM work is carried out for its parent company, Rank Hovis McDougall, but said that there were close ties with the parent's mainframe burenu, RHM Computing.

The RHM CentreCOM bureau — or studio as the company prefers to call it — ia alao big in micropublishing and is keen to point out that its BetaCOM ayetem can generate a shortened version of the Chinese choracter set ond the diacritics in the Serbo-Croat and other alphabets. It can also handle proportional epacing.

Eurocom Data, the COM bureau group owned by National Westminster Bank, was talking to visitors about new facilities like the 6,250 bpi tape drive now linked to its recorders at its Rickmansworth, Herts, centre and tha fact that Eurocom can now generate COM from data on floppy discs.



The MLP-1 graphics COM recorder from Laser Scan of Cambridge was exhibited at Microforum by Imtec which will soon be selling the system in the US. The operator in our picture is loading a reel of 35mm film.

COURSES

DEMAND among engineers for more information about digital control systems hes prompted the Institution of Electrical Engineers to run two courses on the subject. They are residential and will be held at Balliol College, Oxford. Divided into an introductory end advanced course, the first part will ba from April 14-18, end the second from September 14-19. Details can be obtained from the Secretary, IEE, Savoy Placa, London WC2R 0BL. Quote ref LS(CG).

A short one-week course on technical management is to be held by Huddersfield Polytechnic in Moy. Further information may ba obtained from Ian Barclay, Department of Management Studies, Tha Polytechnic, Queansgate, Huddersfield. Tel 0484 22288.

A one-day course covering the principles and concepts of teleprocessing, online and distributed systems and their audit implications, will be held at Chartered Accountants Hall on April 30. Organised by tha Institute of Chartered Accountants in England and Wales, the course is aimed at internal auditors and practising accountants. Applications should ba eant to the Courses Department, Institute of Chartered Accountants in England and Wales, PO Box 433, Chartered Accountants Hall, Moorgate Place, London EC2P 2BJ.

Portsmouth Polytechnic is to run microprocessor courses as from the end of March. The Department of Electrical and Electronic Engineering is to hold courses ranging from first steps in micros to micro briefing for directors and managers, commencing March 26. Details from Mrs Sizer, Portsmouth Polytechnic, Anglesea Road, Portsmouth.

Compiler writing techniques is the theme of a course to be held by Brunel University, and aims to give the student a detailed introduction on the algorithms and techniques used in compiler writing. The course will cover language, table handling, hash tables, syntax analysis, simple code generation and storage and register allocation. It is organised by the Computer Science Department, further details can ba obtained from R. Saunders, Industrial Services Bureau, Brunel University, Uxbridge, Middlesex. Tel Uxbridge 39234.

A series of three-day courses entitled Design of Microprocessor Based Systems is currently being held by Prodex (Seminars). Day 1 is entitled Microprocessor systems — the fundamental concepts; Day 2 Design, development and understanding the complete system; and Day 3 Micro software — understanding and managing its production and maintenance. The course finishes in London on April 22-24. The cost is £65 and details can be obtained from Prodex, 79 High Street, Tunbridge Wells, Kent. Tel: 0892 39664.

Packaged accounting system based on Commodore Pet

A £4,000 packaged system aimed at providing small businees users with a complete hardware and software configuration has baen put together by tha London-based microcomputer dealer Lion Microcomputers.

The package is based on the ubiquitous Commodore Pet, in this case a 32K-byte version, which comes with Commodore's dual disc driva and printer. The software comea from two separate sources, Radia Computer Services, and Petsoft.

The Radia Accounting System software is being supplied exclusively for the Lion package, and is intended for users with only a basic knowledge of bookkeeping. It can handle all ledger accounting, according to Lion, by recording information on to "books" of prime entry, and then automatically updating the appropriate ledgers.

It is capable of handling 300 sales accounts, 300 purchase accounts and 90 nominal accounts, with up to 2,500 entries a month.

To round off the package, Lion also includes the Petsoft Stock Control System. It does not, however, link directly with the Radia software.

The Radia package can be purchased separately for £1,200 plus VAT. The total system price of £4,000 includes tax.

NL New from NEWBURY

Smart micro-based Visual Display Terminal Model 7000/7000C

- Teletype compatible
- 24 lines of 80 characters per line
- Selectable baud rates from 50 to 19,200 baud
- CCITT V24 or current loop interface
- Selectable half or full duplex
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- Plus XY cursor address and page mode facility, on model 7000C
- Single end user price from £495

Matrix Printer Model 8300

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- Single end user price £460

All prices include modem and power cables ready to plug in plus free delivery in UK.

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INDIAN SCENE

Report by Tim Palmer

Among the most thrusting and ambitious of the new Indian computer and computer services companies is Datamatics Consultants of Bombay. Under the energetic leadership of its president, Dr Lalit Kanodia, Datamatics has forged close links with one of the fastest growing companies in the world, Wang Laboratories.

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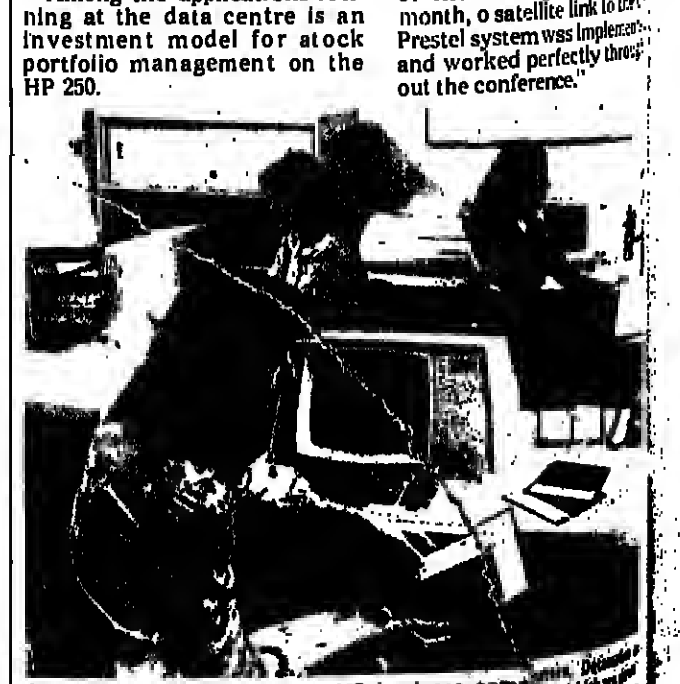

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Heywood Electronics
International General Electric
P.C.M.L.
Penny & Giles
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Rack-Data
S.E./Laba (EMI)
SEN Electronics
Sintrom Electronics
Techex
Teleprinter Equipment
Wessex Electronics
3M's
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LASER technology is pervading many areas of information processing these days, including micrographics, so it was not surprising to find several laser based products at Microforum Europe 80.

Imtec, the UK microfilm equipment group that builds the majority of the products it sells, was showing the MLP-1 computer output microfilm recorder from another manufacturer, Laser Scan of Cambridge.

Imtec, in addition to Laser Scan itself, is now marketing the MLP-1. The main feature of the system is that it can reproduce an intricate drawing on a 35 mm film frame using a unique laser technique.

The MLP-1 is aimed at users prepared to spend about £45,000 on a much faster alternative to a high quality flat bed plotter.

Configured around a 16-bit Texas Instruments 9900 series microprocessor, the MLP-1 uses a laser produced by a helium neon source and controlled by a fast X-Y deflection system to generate drawings in up to two minutes with 256 grey scale levels.

The MLP-1 can be linked to a host computer via RS 232C or 20 mA interface. Software drivers for Digital Equipment PDP-11 and Prime hosts already exist and Laser Scan says that drivers can easily be written for other machines.

Ferranti Cetec at Edinburgh is a Laser Scan customer which incorporates the MLP-1 in the Clumis systems that it supplies to end users for cartographic and engineering design.

The MLP-1 is one of the products to be sold by the US sales operation now being set up by Imtec with offices at Summerdale, New Jersey. It will be exhibited by Imtec at the National Micrographics Association exhibition in the US next month.

An alphanumeric COM recorder employing laser technology, the Komstar 300, was one of the star exhibits on the Kodak stand.

Komstar can generate 16 mm film or 105 mm microfiche and one of its biggest attractions must be that it uses a laser sensitive film that requires no wet chemical processing. This dry technique makes the Komstar much more like a proper electronic computer peripheral than older types of COM recorder. The Komstar is a standalone unit with its own controller.

A COM recorder designed specifically for online operation with an IBM mainframe was a product that NCR salesmen on the company's Microforum stand were ready and willing to discuss even though it was not on show. The 643-1020 recorder has not yet been formally launched in the UK but, said NCR, units can be shipped to customers who want the machine.

The 643-1020 can produce titled, indexed, cut and dried microfiche from print files or directly from Sysout data streams.

Software developed by NCR interfaces with the DOS, DOS/VS and OS/HASP/JES spooling systems. The 1020 itself incorporates a 16K-byte buffer that can store a complete page of data and the data throughput varies from 50K to 500K characters per second depending on the channel.

For most potential COM users an in-house machine cannot be cost justified so they have to go to one of the collection of COM bureaux dotted around the country. Harlow, Essex, is the location of RHM CentreCOM, one of a handful of COM bureaux that appeared at Wembley.

RHM CentreCOM was talking about the new graphics service based on its 3M BetaCOM recorder at Harlow. Like the Laser Scan MLP-1, the BetaCOM films on to 35 mm frames but it uses the more conventional CRT and stroke vector technique for generating the drawings. RHM said that tapes formatted for Calcomp 900 series plotters could be run on the BetaCOM without any changes.

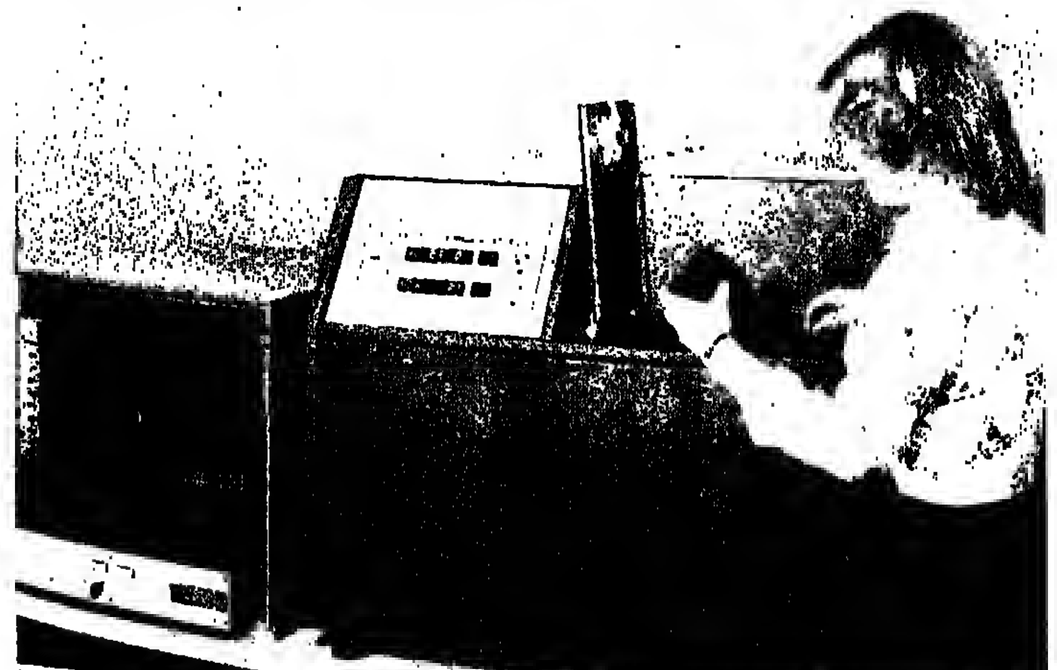
For commercial applications, alphanumeric data and simple graphics like bar charts can be mixed by the BetaCOM on the same microfiche and even on the same frame at reductions of 42 or 48 times.

The same can also be achieved at 24K reduction on 16 mm roll film. If required a dozen or so 35 mm frames can be created on the same 105 mm fiche at reductions of 9 or 12 times.

RHM pointed out that only about 10% of its COM work is carried out for its parent company, Rank Hovis McDougall, but said that there were close ties with the parent's mainframe bureau, RHM Computing.

The RHM CentreCOM bureau — or studio as the company prefers to call it — is also big in micropublishing and is keen to point out that its BetaCOM system can generate a shortened version of the Chinese character set and the diacritics in the Serbo-Croat and other alphabets. It can also handle proportional spacing.

Eurocom Data, the COM bureau group owned by National Westminster Bank, was talking to visitors about new facilities like the 6,250 bpi tape drive now linked to its recorders at its Rickmansworth, Herts, centre and the fact that Eurocom can now generate COM from data on floppy discs.



The MLP-1 graphics COM recorder from Laser Scan of Cambridge was exhibited at Microforum by Imtec which will soon be selling the system in the US. The operator in our picture is loading a reel of 35mm film.

COURSES

DEMAND among engineers for more information about digital control systems has prompted the Institution of Electrical Engineers to run two courses on the subject. They are residential and will be held at Balliol College, Oxford. Divided into an introductory and advanced course, the first part will be from April 14-18, and the second from September 14-19. Details can be obtained from the Secretary, IEE, Savoy Place, London WC2R 0BL. Quote ref LS(CG).

A short one-week course on technical management is to be held by Huddersfield Polytechnic in May. Further information may be obtained from Ian Barclay, Department of Management Studies, The Polytechnic, Queensgate, Huddersfield. Tel: 0484 22288.

A one-day course covering the principles and concepts of teleprocessing, online and distributed systems and their audit implications, will be held at Chartered Accountants Hall on April 30. Organised by the Institute of Chartered Accountants in England and Wales, the course is aimed at internal auditors and practising accountants. Applications should be sent to the Courses Department, Institute of Chartered Accountants in England and Wales, PO Box 433, Chartered Accountants Hall, Moorgate Place, London EC2P 2BJ.

Portsmouth Polytechnic is to run microprocessor courses as from the end of March. The Department of Electrical and Electronic Engineering is to hold courses ranging from first steps in micros to micro briefing for directors and managers, commencing March 26. Details from Mrs Sizer, Portsmouth Polytechnic, Anglesea Road, Portsmouth.

Compiler writing techniques is the theme of a course to be held by Brunel University, and aims to give the student a detailed introduction on the algorithms and techniques used in compiler writing. The course will cover language, table handling, hash tables, syntax analysis, simple code generation and storage and register allocation. It is organised by the Computer Science Department, further details can be obtained from R. Saunders, Industrial Services Bureau, Brunel University, Uxbridge, Middlesex. Tel: Uxbridge 39234.

A series of three-day courses entitled Design of Microprocessor Based Systems is currently being held by Prodex (Seminars). Day 1 is entitled Microprocessor systems — the fundamental concepts; Day 2 Design, development and understanding the complete system; and Day 3 Micro software — understanding and managing its production and maintenance. The course finishes in London on April 22-24. The cost is £85 and details can be obtained from Prodex, 79 High Street, Tunbridge Wells, Kent. Tel: 0892 39664.

Packaged accounting system based on Commodore Pet

A £4,000 packaged system aimed at providing small business users with a complete hardware and software configuration has been put together by the London-based microcomputer dealer Lion Microcomputers.

The package is based on the ubiquitous Commodore Pet, in this case a 32K-byte version, which comes with Commodore's dual disc drive and printer. The software comes from two separate sources, Radia Computer Services, and Petsoft.

The Radia Accounting System software is being supplied exclusively for the Lion package, and is intended for users with only a basic knowledge of book-keeping. It can handle all ledger accounting, according to Lion, by recording information on to "books" of prime entry, and then automatically updating the appropriate ledgers.

It is capable of handling 300 sales accounts, 300 purchase accounts and 90 nominal accounts, with up to 2,500 entries a month.

To round off the package, Lion also includes the Petsoft Stock Control System. It does not, however, link directly with the Radia software.

The Radia package can be purchased separately for £1,200 plus VAT. The total system price of £4,000 includes tax.

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JOHN KAVANAGH REPORTS ON THE LATES

Lack of hard currency slows West's efforts

WESTERN companies are gradually giving up trying to sell computer equipment in Eastern Europe because of the lack of hard currency there and the continuing growth of the local industry, even though the Eastern European products are not as technologically advanced as those from the West.

This was clear at the Leipzig Fair in East Germany last week, where earlier exhibitors like IBM, Digital Equipment, Olivetti and NCR were once again missing and those companies which did turn up spoke of long discussions but little business. In addition, the attitudes of those companies had hardened.

There was no longer a willingness to barter for business and accept goods in return for computer equipment. Nor were the exhibitors looking to license the manufacture of their products in Eastern Europe.

One company there in strength was the West German business systems firm Triumph-Adler, through its Berlin agent, Horn und Görwitz, whose star exhibit was the Alphatronic microcomputer (CW, February 21).

The system is going well: Horn und Görwitz said it had sold 20 in West Berlin without promoting it and was negotiating the sale of "a couple of systems" in East Germany, despite the launching of another microcomputer by the East German computer organisation, Robotron, at Leipzig.

At present the Alphatronic has a Basic interpreter. A compiler is pinned and Pascal is due to be added in the autumn. Applications packages are also being looked at for small businesses such as firms of solicitors and accountants.

Triumph-Adler's TA20 accounting system was also on show. Horn und Görwitz said it was suitable for the East German market because it fitted in below the smallest Robotron system. The SE2000 word processor, with a 4K memory and single minifloppy disc, was also there.

Elsewhere there were few computers to be seen. Hewlett-Packard had its 9835 desk top computer on show and another Leipzig Fair regular, Philips, showed the Four Phase Systems key-to-disc system, now sold under Philips' P7000 label.

After a lot of interest last year and sales of four systems to Kombinat Fortschritt, the East German agricultural equipment manufacturer, Philips reported no interest at all this year.

"There is the Robotron 4230 but its terminals are linked through a concentrator so it's not a real time system and there's little software," said Philips' data systems sales manager for East Germany, Jürgen Greiner.

"They say there's something more sophisticated coming — but that probably means in four years' time. And if they think they have their own systems available locally they won't buy anyone else's," he added.

Greiner felt, however, that if more hard currency was available in Eastern Europe, end users would go to firms like Philips for their systems rather than to local organisations.

On the idea of taking goods instead of money Greiner said that could be acceptable to Philips but Eastern European countries could not guarantee to stick to delivery schedules.

Philips' main effort at Leipzig went to promoting industrial equipment, including process control systems.

If the computer market was closed to the West there was optimism about the opportunities in facsimile equipment. The latest system in Kalle Infotec's range, the 6000/450, was awarded a Leipzig Fair gold medal and the firm had a sign on the stand announcing that it was the official supplier of facsimile machines to the Moscow Olympics later this year.

Manfred Schuster, from Kalle's international sales section, said no facsimile equipment was made in East Germany but there was tremendous interest in it.

The company had shown its machines three times at the Leipzig Fair and was just starting to do business; one showpiece was a network set up between East Berlin, Leipzig and Dresden by the party newspaper Neues Deutschland for sending typescript from office to office. The Soviet news agency Tass was also very interested.

Schuster said there were signs that communications lines were improving, at least in places: the Neues Deutschland network was working well at a transmission rate of 4,800 bits per second.

An East German user confirmed that the improvements were only here and there: his organisation could only run terminals at 2,400 bits per second. He said the Neues Deutschland network was using private lines.

Another firm testing the facsimile market was Toshiba, which, with Hitachi, offered a small Japanese presence. It reported a lot of interest in facsimile equipment and felt East Germany was ready for it.

Hitachi's small stand offered colour television screens and a diagram of an 8-bit microcomputer. The stand was not manned, however, and a sad pencilled notice saying "no brochures" was the only other adornment.

A profusion of microfilm readers, paper handling equipment and copiers made up for the lack of computers from the West. A. B. Dick, which had a sign up announcing that it was now a subsidiary of GEC, showed all types of copier.

Wolfgang Schmitz, a technical specialist with the company, said copiers were supplied to Eastern Europe by the Soviet Union but they needed developer and toner and were not plain paper units; hence the interest in copiers from the West.

Schmitz said A. B. Dick was not exhibiting word processors because the market was restricted by the fact that they were built in Hungary, Poland and East Germany. The company had shown microfilm equipment last year but found it was too expensive for the Eastern European market.

Firms which disagreed included Kalle Infotec, AM International and the Bell and Howell agent, Mikrofilm-Center Klein. This company pointed out that, although Robotron had been making microfilm systems since 1076, it still lacked some types of equipment such as reader-printers and portable fiche readers.

Paper handling equipment from the West was popular, according to Pitney Bowes, because the East Germans had failed to make satisfactory machines.

Another firm showing this type of equipment, Fima, from Italy, which is a regular exhibitor at the Leipzig Fair, said it had sold "hundreds" of machines to Robotron. The East German organisation then re-sold them under its own label.

Fima did well in the Comecon countries because its equipment was sold there by a West German engineering company, Techint, which was happy to accept heavy engineering equipment as payment. Techint then paid Fima in cash.

Companies maintaining low profiles at Leipzig included Centronics, which was there under the banner of a Vienna firm, International Electronics, which also represents Intel.

The company reported great interest from end users in the Centronics 730 terminal printer, which runs at 100 characters a second.

By comparison, the East German organisation RFT's latest terminal printer had a label which said it ran at 800 characters a minute.

All roads lead to the trade fair at Leipzig, where some exhibition halls are in the shadow of the old town hall (right) and others are on the hall's grounds outside the city.

ABOVE — despite the emphasis on microcomputers on the Robotron stand, the IBM-compatible 1055 mainframe attracted its share of interest. This operator was controlling a 1-megabyte system with new 10 megabyte disc drives from Bulgaria.

BELOW — "The modular concept" was part of the distributed processing theme of Robotron's stand. One of the modules was this new 8200 reservations terminal which was linked to a 4201 system in Dresden to nine terminal system has been sold to Bulgaria to handle reservations in 120 hotels in the Sofia area.

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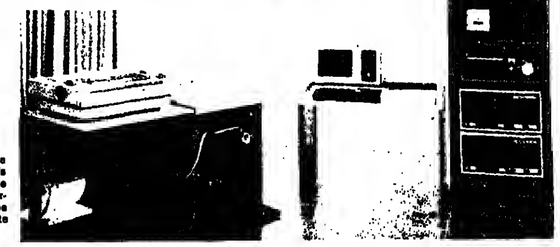
PRODUCT LAUNCHES AT THE LEIPZIG FAIR

'16-bit' micro is the star on Robotron's stand



The highlight of the Robotron stand was the K1600 microprocessor. The "16-bit" micro is arranged as two eight-bit processor chips. In the rack on the right it is in the top section. Underneath are a cassette tape unit and paper tape device from Robotron and two 5-megabyte cartridge disc drives from Bulgaria.

A MICROCOMPUTER with 16K-bit memory chips, a daisy wheel printer and an electronic telephone exchange system were the highlights of East German stands at the Leipzig Fair last week. And distributed processing was featured through new data capture devices and specialised terminals.

The K1600 microcomputer, from the manufacturing organisation Robotron, was launched as a 16-bit processor. But this device was split between two new 8-bit chips labelled U83a and made by the microelectronics concern Kombinat Mikroelektronik.

Dr Horst Giebler, director of research and development at Robotron, said the issue of whether East Germany had a 16-bit processor chip was not important. "It depends on your approach," he said. "It depends on whether you want a fixed instruction set or the flexibility of the 8-bit device."

The model on show was the smallest and only model produced so far, the K1620, which has a maximum memory of 32K-words. Robotron said the memories included new 16K-bit chips, although Kombinat Mikroelektronik had only 8K-bit chips on show.

Peripherals attached to the K1620 included floppy disc drives from Hungary and 5-megabyte cartridge disc units from Bulgaria. The K1600 can communicate with the Comecon countries' unified range of general-purpose computers.

Dr Giebler said Fortran was available on the K1620 and that Pascal and Basic were under development. Software was available for general data processing, data acquisition, process control and laboratory applications.

Future models will include the K1630, with up to 128K of memory, and the K1610, which will be aimed at the OEM market. Robotron has its eyes on the West for this product.

The K1800, the 8-bit K1520, launched last year, and the earlier K1510, were built into Robotron's latest offerings in the small business systems and distributed processing areas.

These included the A5103 accounting system, with the new 1152 daisy wheel printer, which runs at 30 characters per second. The printer, too, is being offered to the world OEM market. The A5103 can have up to 36K-bytes of memory, two floppy disc drives and two cassette tape units.

New data capture devices included the programmable A5201, available with floppy discs and cassette tapes, and the K8927 reservations terminal aimed at the hotel and travel trades.

It has built-in floppy discs and can have up to 54K-bytes of memory and a choice of printers.

On the stand it was shown communicating with a Robotron 4201 small computer in Dresden at 2,400 bits a second. It can also link to the unified series computers. Robotron has sold a nine-terminal system to Sofia, it is pictured on the opposite page.

The daisy wheel printer was also in the S6001 electronic typewriter, which was making its Leipzig debut after its launch at the Hanover Fair last year.

This device uses Kombinat Mikroelektronik's U880 8-bit microprocessor chip, which is compatible with the Zilog Z80, and has 4K of memory for storing text and layout information on things like margins and spacing.

Dr Frank Seiffert, deputy director-general of Robotron's foreign trade section, said the electronic typewriter could bring big business for Robotron in countries where the organisation is already strong in the typewriter market.

The new Robotron terminals, business systems and typewriters — based on chip memories and processors and using floppy discs as storage devices — have taken over from the older systems based on paper tape and magnetic tape and made by the Daro organisation.

Daro merged with Robotron last year, making Robotron the sole East German supplier of office systems and computers, from manual typewriters and drawing office equipment up to mainframe computers.

Robotron now has 70,000 staff, including 9,000 in research and development. It is looking to expand its office product range further with the addition of copiers while, on the microcomputer front, it is working on handwritten input.

The emphasis on microcomputers detracted from the system at the other end of the computing scale, the 1055, Robotron's contribution to the latest unified range from the Comecon countries, the ES series.

The 1055 was shown at the Leipzig Fair for the first time in 1978 but only went into production last year. It is the biggest machine in the unified range and falls between an IBM 370/148 and 158.

Like the first ES series, the second is compatible with IBM's 370 systems. The 1055 has a cycle time of 1,140 nanoseconds. It can have 1 or 2 megabytes of memory. A database management system is available.

A recent advance has been the introduction of 100-megabyte disc units, two of which were linked to the 1055 on the Robotron stand. They are made by the Soviet Union and Bulgaria.

Formerly the biggest disc available was a 29-megabyte unit from Bulgaria.

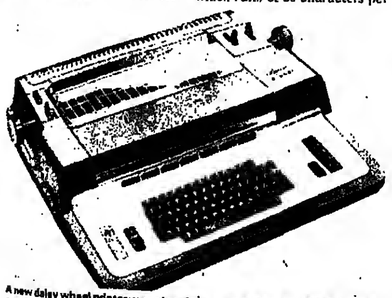
However, the big East German government data processing organisation, Kombinat Datenverarbeitung, formerly Maschinelles Rechnen, has not been able to install any 100 megabyte disc drives yet and a Soviet Union representative at Leipzig said none had been exported from his country. Nevertheless, he expected 200 megabyte discs to be available late next year.

The weakness of Eastern European disc units in particular has led Robotron to look to the West, especially to Control Data, for peripherals.

Control Data bought a Robotron 1040 from the first unified range five years ago (CW, April 17, 1975) and gave good reports of the system. Three years later Robotron and Control Data signed an agreement which involved the East German organisation selling systems to the Third World and Control Data supplying peripherals "where appropriate".

The agreement has not brought business, however. Last week at Leipzig Dr Uwe Wulf, deputy director-general of Robotron, said: "We have not made much progress with this deal. We must discuss it further, perhaps with other partners."

Despite this setback, Robotron has sold some 1640 systems to India, Iraq and Cuba.



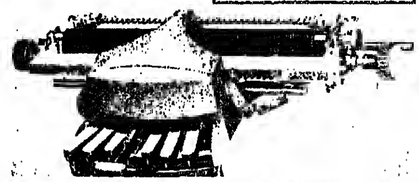
A new daisy wheel printer was a key feature of Robotron's S6001 memory typewriter. The printer runs at 30 characters a second. A 4K memory is built in but there are no external peripherals.

DP staff shortage but . . .

THE shortage of programmers experienced in the US and Western Europe is also a problem in East Germany but the way industry is organised there makes the problem much less acute, according to Dr Frank Seiffert, deputy director-general of Robotron's foreign trade section.

"Our industry is organised into huge combines — one for agricultural equipment, one for computers and so on," he said. "For every industry there's an institute and part of the work of those institutes is to develop software for their industries.

"We sell this software as packages, which we can adapt as necessary: in fact this facility helped us to win the order from the State Building Works in Iraq."



An unusual office product from Robotron was the Erika 500 Braille typewriter. It was launched at last year's Leipzig Fair, when it won a gold medal. Erika is also the brand name of typewriters sold in the West by Robotron.

Launched with the K1600 microcomputer was the A6801 micro development system. Software can also be developed for the K1600 on a 4201 or a computer from the Comecon countries' unified range.

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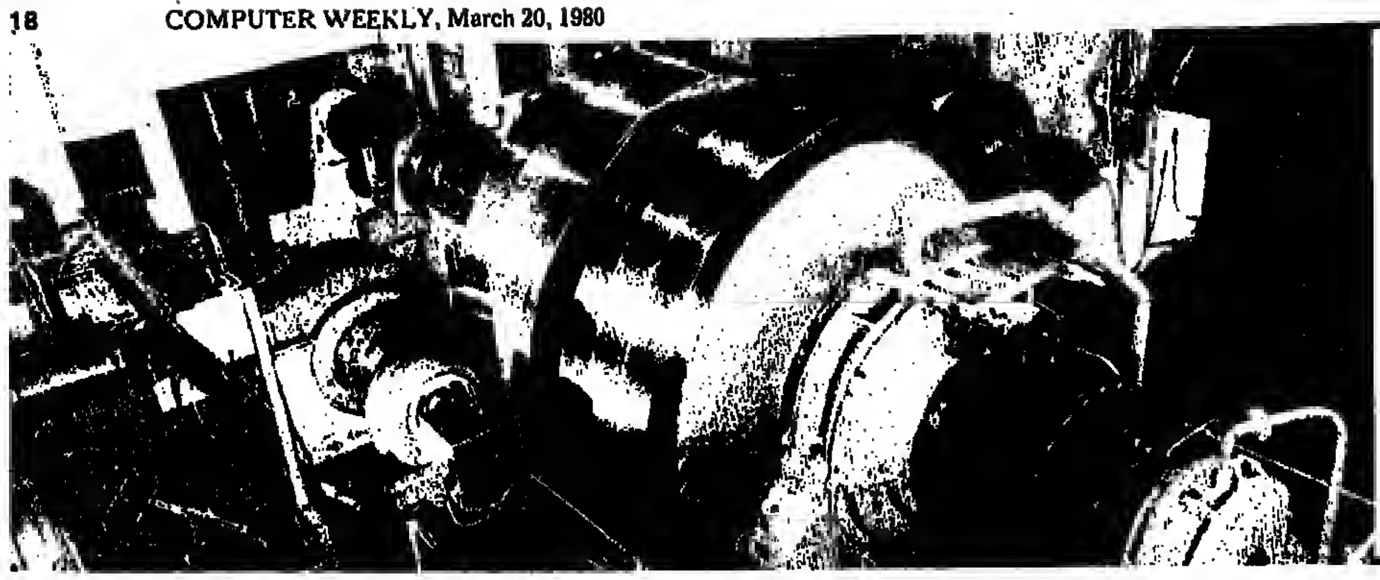


Chenging your meinfreme is en egonising time — especielly if you ere ewitching to another menufecturer es well. It can be particularly heartbreeking end demoralising for the progremming eteff who heve to convert all the programe, end for the ops etaff who may have to restructure their ehifts to fit the new schedules.

Laura Tethem went to one installation where local menagement seized the opportunity to eheke up the whole department end get a better teem out of it es well es a better ssrvice for the user departmente.

● Pictured left is the dynamometar installed at Dunlop's Birmingham headquarters, which is being used to test the atress and strain of tyres. The large drum in the centre acts as a road surface.

Spin-offs from changing the mainframe

by Laura Tatham

Our picture shows a section through one of Concorde's wheels to illustrate the carbon brakes which Dunlop developed and makes.

TO switch from one powerful mainframe to another, particularly when the new system is of an unfamiliar make, is never easy. For the management services department which provides computing services for the 5,000-strong multi-division engineering group of Dunlop, it was a particularly difficult exercise.

Out of the struggle, though, came a reorganised and stronger computer team which successfully exploited in-house management potential.

Equally important, a closer relationship with users has improved the quality of service and smoothed the implementation of several important new online systems.

In addition to new hardware and software, the change involved a shift in emphasis. The ICL 1904A systems that had built up over some years were mainly batch processed.

Users, particularly Aviation Division, largest in the group and management services' biggest "customer," was eager for more online systems.

Various aspects of production planning and control would be markedly improved by this development. The large number of design and other engineers employed on the site would benefit by having demand terminals for processing the many technical programs they constantly used.

It was largely because ICL had not at that time, in Dunlop's opinion, sufficiently developed native 2900 operating systems that the decision was made to choose another supplier.

Univac's background of expertise in online computing, the stability of the 1100 operating system (a direct descendant of Exec 8) and its strong commitment to manufacturing applications were among the factors that led to the selection of that maker's 1100/12 multiprocessor system.

This move entailed a lot of Cobol/Cobol conversion in addition to which there was an ambitious programme for new online systems. Initially, owing to a combination of difficulties for which no single party was wholly to blame, the conversion exercise was fraught with problems.

By February 1979 when Alan Brooks, who is now management services manager, joined as systems development manager, the schedule had slipped badly and there was a general feeling of discouragement.

"My first, urgent short-term objective was to put new life into the conversion project," he said. "I therefore formed a special team from existing staff and made it solely responsible for seeing the job through. Univac's contribution was to set up a quality assurance group to help us."

Hard work, effective use of the manufacturer's conversion tools, close liaison between the teams and careful monitoring of progress soon began to show results. Morale rose accordingly.

"Our intention to introduce far more online working gave us a good opportunity to establish a really close relationship with our users," Brooks continued.

"My department works on a cost-recovery basis. Each of the 10 divisions based at Coventry pays a percentage of fixed costs for the computer installation. On top of that, there is a fee based on historical and projected usage.

"To me it seemed clear that our job was to gear ourselves to provide a first-class service on the Univac 1100/12.

"I hope the divisions will feel the levy they pay is a good investment. I do not relish being lumped with necessary evils like Income Tax or VAT!"

Under weak or inexperienced management, any technical team is prone to spend more time contemplating the computer's navel than studying the requirements of users.

Brooks was aware of this trap. There would be plenty of challenges to meet in designing and implementing the new programs.

This made it specially important to lay strong emphasis on service within the department — a philosophy that is reflected both in its organisational pattern and in managers' duties.

Two managers were appointed from within the existing staff and a third is to be recruited from outside, all to report to Brooks.

There is, for instance, no operations manager but a computer centre manager. The broad description of his duties is not "to keep the computer centre working" but "to provide services to users" — a subtle but important difference.

One of his four supervisors is responsible for production, including scheduling. Another looks after communications. The third monitors and analyses hardware performance.

The fourth is in charge of an operations support group which modifies and improves programs, carries out general maintenance on these, and liaises with groups engaged in activities like software and systems development and database.

Software is also the responsibility of the computer centre manager. This has been included so that he can be fully accountable for the level of service provided, for down time can result from unstable software as much as from hardware failure or operator error.

The technical services manager's area covers things like database (there is a database administrator), and development and support of the technical computing programs for engineers, designers and mathematicians. Standards, training liaison and library administration also come under his aegis.

Yet to be appointed is the systems development manager whose work will be concerned with commercial systems. Each of four groups covers one broad area of the company's business, for example commercial systems for Aviation Division.

Personal accountability is an article of faith with Brooks. Each person is given as much responsibility as possible. The functions of systems analysis and programming are merged.

All projects are carried out by multi-discipline teams each of which is headed by its own leader and is, as far as practicable, preserved as a stable entity.

Everything is visible through a well-defined and adhered to reporting structure. Regular six-monthly reviews that include personal discussion between each individual and his immediate superior chart progress and help to point directions for future development.

"We did not have to look outside for most of our management potential. It was there, on our own doorstep, and the working environment we are creating will encourage others to come forward. As I mentioned, we are recruiting a systems development manager.

"At a lower level, we found two analyst/programmers among ex-servicemen who were successfully trained through the TOPS scheme."

Throwing aside the veil that in many installations effectively screens the activities of the computer team from the eyes of the curious, Dunlop Engineering's management services department now regularly prepares printed reports both for users and the group board of directors.

"The users are, if you like, our shareholders. They therefore have a right to know how we are progressing. This means telling them if we have gone wrong as well as about our achievements, of course."

The record has been extremely good: The Univac 1100/12 is now handling a heavy, mixed workload of TP, batch and demand work.

Response time at the 50-plus video terminals it supports is normally not more than a few seconds.

Overall system availability: 98.8% and, for the teleprocessing network, 97.3%. This network includes two lines to headquarters where demand applications include financial planning; there is also an ICL 2903.

Results of hardware performance monitoring are discussed each fortnight between Dunlop and Univac staff. Progress is regularly reviewed at meetings between the computer team and the Univac account executive.

Operations and development staff supplement informal contacts with users by meetings. Once a month, Brooks chairs a meeting with division heads and department managers.

These gatherings have done much to foster mutual respect and understanding at all levels and have helped the computer team members personally identify with users' aims and problems.

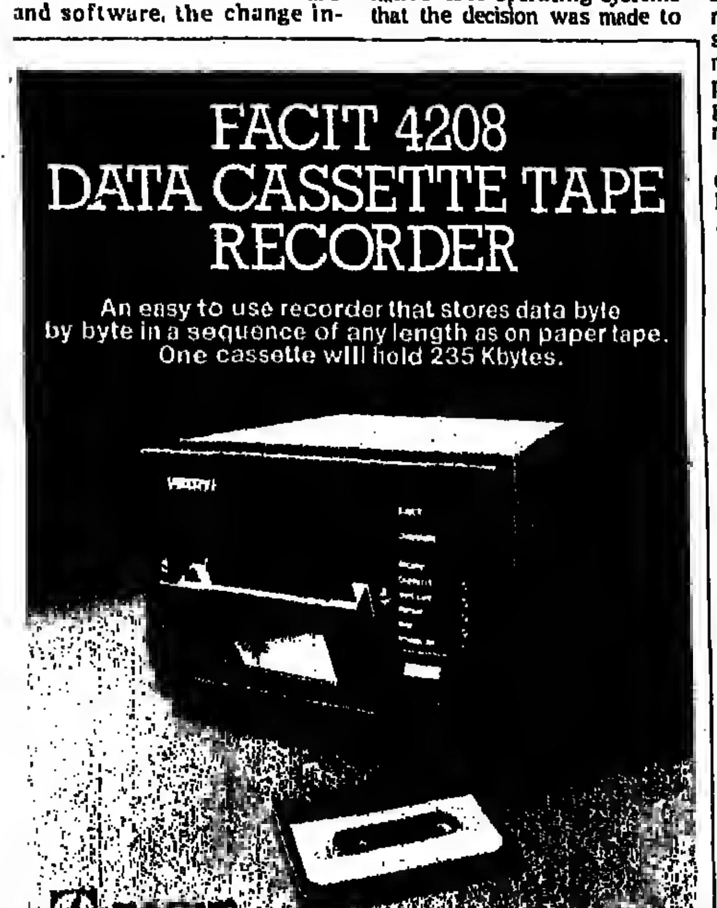
Careful watch is also kept on operating costs. Great benefits have been achieved, for instance, by using two Xerox computer form printers which between them prepare some 120,000 copies a month.

Transparent overlay masks replace printed forms and this simplifies stock-keeping as well as reducing overheads. Paper reduced to A4 during printing also makes for easier handling.

The performance of the Univac 1100/12 has allowed the shortening of working hours. Three-shift working has been reduced to two shifts, overtime being required only to meet month-end peaks.

Early obstacles are a thing of the past and everything is going full steam ahead. [illegible] online systems [illegible] operational or in course of implementation include commercial order book processing and production [illegible] Aviation Division's [illegible] system for Wheel Division (which turns out some [illegible] loads a day for the car and aircraft industries) and a purchase order recording system with interrogation facilities.

In consultation with users, a full programme has been drawn up for [illegible]



COMPANY NEWS

Siemens Data over the $1,000m mark

SIEMENS Data has followed ICL and CII-Honeywell Bull of France through the $1,000 million turnover barrier. For the year to September 1979, the computer division of the West German electrical and electronic giant recorded a turnover of $1,030 million, and was profitable for only the second time in its history.

Siemens notes that, while the overall division is now in profit, major contributors are the larger machines such as the 7.760 (about equal to an IBM 3031) and that small computers, a new departure for Siemens, are still in the start up phase and are costing money.

The growth of about 22% over 1978 matched that achieved by ICL, and is particularly striking in the context that Siemens' main competitor, IBM West Germany grew only 4.4% during 1979. Orders at Siemens were 20% ahead at $1,270 million, leaving it excellently placed for 1980.

Despite the fact that the Siemens 7.000 series includes the IBM 370 instruction set, Siemens says that to provide full IBM compatibility would put up the price of its computers 30%. This was why the company began marketing Fujitsu's M-180 and M-200 as the Siemens 7.870 and 7.880 last year.

The first 7.880 went to the Hahn-Meitner nuclear research institute in West Berlin, and the first 7.870 to the Datev tax consultants and accountants bureau (CW, September 13, 1979). In addition Siemens has one of each at its Perlach computer centre near Munich.

Siemens is looking for another dozen large systems orders from West Germany and other European countries this year.

Discussions are under way between Siemens and Fujitsu which could lead to Siemens taking a further model of Fujitsu's M-series, and Fujitsu taking the yet-to-be-announced successor to Siemens' ND-2 laser printer.

Siemens claims 21% of the West German market.

COMMENT

EVEN the most ardent EEC supporters are beginning to despair as the insatiable Common Agricultural Policy continues to take 75% of the budget, essentially to preserve the past, while the future, for example the computer industry, makes do with crumbs.

The sum for software project support (CW, March 13) is derisory: What is £9 million set against the UK's EEC deficit of £1,000 million?

The French look set to come out on top, too, when preferential treatment for national computer industries ends this year.

While ICL talks bravely about being unconcerned at the ending of the rules, asking for them to be replaced by EEC-wide preferences for European companies, CII-HB managing director Jean-Pierre Brulé is confident for a much better reason.

He notes (page 8) that the French government has allocated another £45 million for computer support, and expects his business in the public and para-public sector to continue at its present high level. By contrast ICL stresses that only 5% of its business is done under single tender rules, implying that it expects the UK government to play by the rules.

The Civil Aviation Authority apparently rejected ambitious plans by the independent UK airlines to cut fares in Europe because it feared they would be turned down by others.

It seems we have yet to learn the first principle of EEC negotiation: You get what you want only if you ask for the moon — and threaten to bring the whole edifice down if you don't get it.

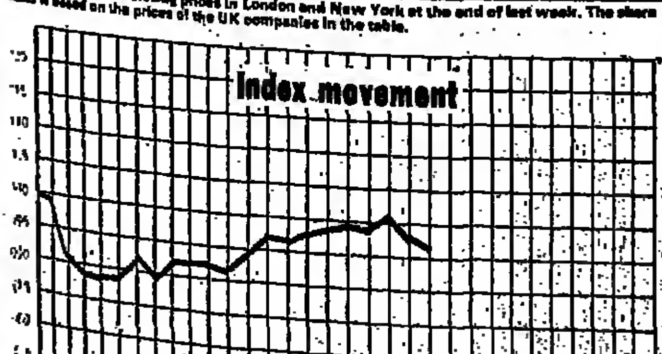
CW SHARES TABLE

Day 14/3/80 Index 98.18 Change −1.83

1980 High	1980 Low	London Stock Exchange Stock	Price (pence)	Change
345	270	Applied Comp Tech	338	—
[illegible]	35	Brown Boveri Kent	36	—
£37	£30¾	Burroughs	£30¾	−£1⅛
78	83	Chloride	83	−2
170	112	Chubb	114	−1
100	80	Cole	93	−4
650	540	De La Rue	639	−1
130	121	EMI	123	—
180	148	Excel	180	—
512	407	Ferranti	481	—
171	345	GEC	380	−1
£414	£35¼	Honeywell	£21⅛	−11
£21	£17⅜	IBM	£17⅞	+£2⅞
151	118	ICL	138	−£⅛
71	64	Kalamazoo	74	−4
240	200	Kode Inter	203	—
£34	£21	Motorola	£25⅝	−2
215	188	Muirhead	188	+£⅜
[illegible]	[illegible]	NCR 1% £37/88	£88	−1
[illegible]	£133	Perkin-Elmer 4%	£138	−£1
470	395	Philips Lamp	395	−£1
111	108	Plessey	138	−36
221	190	Racal Electronics	207	−7
84	72	Rediffusion	78	−7
£31	£21¼	Rockwell	£24¾	−3
£44¼	£40⅞	Schlumberger	£47⅜	+£⅝
£48	£21⅜	Sperry Rand	£23⅜	−£1⅛
£31	£18⅜	TRW	£18⅝	−£⅛
184	200	Thorn EMI	218	−£⅛
£68½	£21⅛	Xerox	£18¾	—
				−£⅛

1980 High	1980 Low	New York Stock Exchange Stock	Price ($)	Change
19⅜	18⅞	AM International	19⅜	+2⅜
27⅜	18½	Ampex	25⅜	+1⅜
39	33¼	Automatic Data Proc	33¼	−⅜
84	65⅝	Burroughs	66⅝	−2⅜
23⅜	18⅜	Computer Sciences	19⅜	+⅜
60½	60½	Control Data	60⅜	−½
78½	65⅝	Digital Equipment	67½	−3⅜
38⅜	21⅜	Harris	31⅛	−2
69⅜	61	Hewlett-Packard	62⅜	−⅜
87½	80½	Honeywell	83½	−8⅜
79⅜	54½	Intel	66⅜	−2⅜
79½	60	IBM	60	−1½
18⅜	13⅜	Memorex	13½	+⅜
61½	48⅜	Motorola	59⅜	+1⅜
38⅜	22	National Semi	32⅜	−⅜
75⅜	63½	NCR	70⅜	−4⅜
48	40⅜	Perkin-Elmer	40⅜	−2⅛
51⅜	48¼	Rockwell Inter	64½	+1⅜
119⅜	96	Schlumberger	104⅜	−1⅜
57⅜	45⅜	Sperry Rand	50½	−1
18⅜	16	Storage Technology	18⅜	—
38⅜	30	Tandy	23⅜	−½
63½	47½	Tektronix	47½	−3⅜
104	86½	Texas Instruments	88⅜	−4⅜
47	40	TRW	42⅜	−⅜
9½	8½	Wyly	8⅜	+⅜
66⅜	58⅜	Xerox	58⅜	−1⅜

The table shows the closing prices in London and New York at the end of last week. The share index is based on the prices of the UK companies in the table.



Black 1979 for IBM's Swiss operation

TURNOVER and profit figures for most of IBM's European subsidiaries are now out, headlined by a horrible 1979 in Switzerland. There, hit by adverse currency fluctuations and customers leasing rather than buying large machines, net profits fell 20% to SFr 41.7 million (£11.4 million) and turnover down 0.4% at SFr 518 million (£142 million).

In West Germany, IBM has published turnover but not profit figures, and there turnover rose a modest 4.4% to DM 6,593 million (£1,685 million). IBM thus does more business in Germany alone than any of its competitors do worldwide. Included in the figure is sales of DM 2,178 million (£557 million). The increase in turnover of 4.4% compares with a 22% advance from IBM's main competitor in West Germany, Siemens Data.

In Holland, net profit rose 2.5% to 143.56 million Guilders (£33.3 million) on turnover up 4.1% at £292 million.

Only turnover figures have been reported by IBM Italia, where the company did 1,235,000 million lire of business (£680 million) in 1979, up a formidable 29% over 1978.

As already reported, IBM UK announced net profit up 24% at £102 million on turnover up 16% at £882 million (CW, February 21); IBM France, like its West German and Italian subsidiaries, reported only turnover, which was up 12.5% at FF 12,464 million (£1,363 million).

It appears that transfer prices appear twice: In the figures of the manufacturing subsidiary, and in the figures of the selling subsidiary, since the figures included here total over $11,000 million, which is almost half IBM's worldwide business for 1979 even without including Austria, Spain and Scandinavia.

IBM does about half its business outside the US, but that includes major markets like Japan and Australia as well as Europe.

No profits given

THE leading European minimaker, SEMS of France has reported turnover for 1979 up 19% at FF 636 million, £69.5 million. No profit figure has been given. During the year, the company installed 1,800 systems from its Mitra and Solar minicomputer lines, bringing the total installed base to 9,300, and expects to celebrate its 10,000th installation shortly.

Luton plant opens

BPC Business Forms' new plant at Luton was officially opened by Sidney Hart, chief manager of the stationery department of Barclays Bank. The premises will house 50 staff, who were previously employed at its Dunstable factory, and new equipment which centres on microprocessors linking clients' input media with computer printers.

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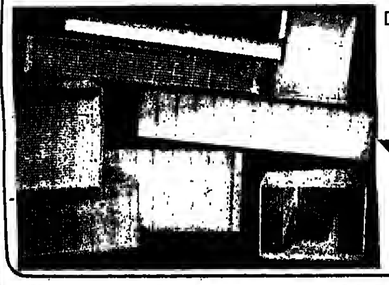

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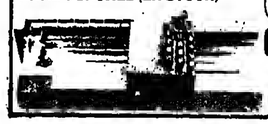

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PRODUCT NEWS

Producing N/C tapes more quickly

FROM Alden N/C cnmes an automatic parts programming system, APPS, that automatically translates o two-dimensional drawing or model into a program for a numerically controlled mnchine. Aldcn says the operator does not need tn be a programmer but produces the program 'by tracing the outline nf the desired tool path or the outline of a model with the stylus of the digitiser.

The system's Digital Equipment PDP-11/03 acccpts x and y cn-ordinntes from the digitiser, smooths lhe trncing, analyses the points and generates o smooth sequence of circular interpnlations and straight line commands that will reproduce the trace.

Strnight lines and continuotion commands are handled automatically nnd the system can scale up or down by any factor entered on the keyboard.

Alden llsts ss examples of applicstions the system could be used for ss flame or laser cutting, cutting gsrment patterns, cutting gaskets and wood working.

In flame cutting spplications existing templstes can be turned into N/C tapes directly and quickly.

The PDP-11/03 hss a dual floppy disc memory and can hsndle Fortrsn, Basic, Alden's numerical control langusgc, Teco and word processing in addition to APPS. The softwsre csn be bought separstely for users with suitable systems.

Alden N/C Division (CW), Alden Self-Transit Systems Corp, 2 Mercer Road, Natick, Massachusstts, 01760, USA.

Table top forms burster

WILKES-MULTIMATIC has introduced a motorised version of its Handi-Burster forms bursting machine. Designed for minicomputer installations and other small users, it stands on a table or desk top and measures 28.5 x 11.5 x 22.5 inches.

It plugs into a standard 13 amp power socket and has a variable speed control of up to 150 feet a minute. It will burst single sheets varying in size from three to 12 inches deep.

Priced at £878 plus VAT, it can be used in conjunction with Wilkes-Multimatic's Mini 2 deleaver. It is guaranteed for six months.

Wilkas-Multimolic Ltd (CW), Parkfield Road, Wolverhampton, WV4 6EL. Tel: 0902 49434.

Portable battery operated data entry terminal that reads bar codes

SOUTHWARK Computer Services, the London-based bureau, hss introduced a portable battery operated dsta entry terminsl for recording data for stock control systems in shops, ships' stores, factories and wsrehouses. It may also be used by soles representatives employing codes to keyln orders numerically.

The system operates in conjunction with bar codes containing coded dsto and installed on shelves or at any other required data collection site.

Attached to the terminal, a pen type wand scanner is drawn lightly across each specified bar code to record data which may be read from left to right to give a forward scan and achieve automatic recording or in reverse from right to left, allowing the operator to key in nddilional data.

Up to 11 characters of data are provided per scan and the recorded data is then stored on the unit's tape cassette for subsequent transmission and processing.

An acoustic coupler is attached to the terminal so that data may be transmitted over an ordinary telephone line for input to a compuler.

As an option, the terminal provides from 8K to 32K storoge memory within the system. As standard, it offers alphanumeric input. Measuring 215 x 110 x 72mm, it weighs 0.7 kilograms.

Southwark Computer Sarvices Ltd. (CW), 95 Southwark Street, London SE1 0JA. Tal: 01-928 2711.

RAM card for LSI-11 machines

FROM Omicron comes a non-volatile 8K 16-bit word CMOS read/write store module for Digital Equipment LSI-11 machines that is available in 4K-words and 8K-words sizes.

The RAM module is in DEC dual height, extended length single slot standards and connects directly into the LSI-11 back plane for power and data transfer.

It incorporates a silver zinc battery which is encapsulated with a charging circuit. Automatic switching is provided in case of a power failure.

With the battery initially charged, the CMOS memory is maintained for a minimum period of one week. Isolation of the battery for long term storage is provided by a board mounted switch.

Module memory starts at an 8K boundary within the LSI memory field. Likewise, the 4K version starts at any 4K boundary. Loaded memory can be protected in 8K, 7K, 6K sections by board mounted switches.

Omicron Control Systems (CW), Cross Keys House, The Parade, Marlborough, SN8 1NE. Tel: 0672 53002.

Series 90 brochure

A BROCHURE describing the architecture and operation of Series 90 general purpose memory systems is available from Intel Corp, Attention Literature Department, 3065 Bowers Avenue, Santa Clara, California 95051, US.

PDP-11 compatible tape transport controller

DIGI-DATA offers a controller for its Series 40 micro-based range of mognetic tape transports which is compatible with Digital Equipment PDP-11s.

The controller fits directly into the PDP-11 mainframe, and plugs into the Unibus. The Series 40 therefore acts as an ordinary DEC Unibus peripherol.

The microprocessor controlled formotter is embedded into the tape transport to eliminate the need for o separate logic package. Operating features include the ability to support a mixture of 7, 8.5 and 10 inch reel sizes at speeds from 12.5 to 45 inches per second. Data densities are for 7 track — 200, 556 and 800 bpi; 9 track — 800 and 1,600 bpi, affording data transfer rates from 2.5 to 120 Kilobytes.

All transports are supplied with Exerciser cards as standard. Digi-Data says these enable the user to test all transport functions separately without tying up the rest of the computer system.

Digi-Data Ltd (CW), 36 The Broadway, Maidenhead, SL6 1LU. Tel: 0628 29555.

Reader/punch unit

A PAPER tape resder punch unit from Midlectron, the M42, has been produced to replace the M22 model which is said to be occepted as a standard for tha industry.

Fully buffered and able to operate at up to 9,600 baud, this two port serial interface device punches ot 50 chps and reads at 120 chps. The M42 is of modular construction, incorporatas touch-sensitive controls and operates on the RS 423 or current loop interface.

Possessing a choice of 16 baud rates from 50 to 9,600, the unit can be used on switch selectable five or eight level operation.

Like the M22, the M42 allows tapes to be prepared and duplicated offline but one of the most important advantages over its predecessor is the 1K character buffers on both ports. This allows the unit to operate at different baud rates on the two ports simultaneously. It costs £995.

Middlectron Ltd (CW), 18 ... Street, Belper, DE5 1PB. Tel: 0773 82 5442.

Video terminal trolley

FROM Data Efficiency comes a vidao terminal trolley that can fit under the modesty panel of a desk but can also be used as a mobile work station.

The trolley comes as standard with pearl grey metalwork and plankad taak wood-grain laminates. Other colours ara available to fit existing office decor.

It is fitted as standard with three inch braked wheels and is priced at £108.24.

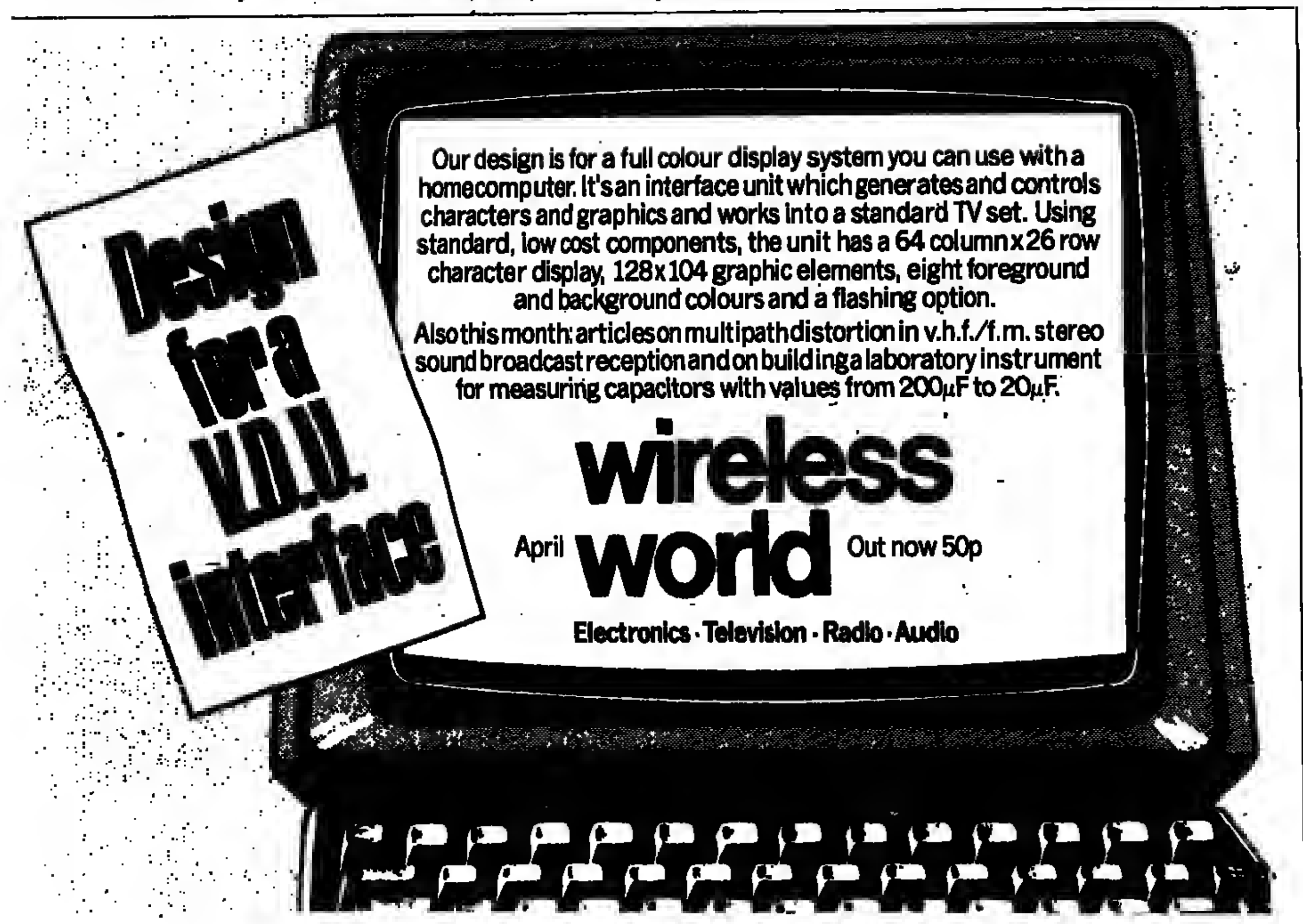
Data Efficiency Ltd (CW), Maxted Road, Maylands Avenue, Hemel Hempstead, ... 7LE.

Brochure on Status system

THE non-ferrous metals research establishment, BNF Metals Technology Centre, has released a brochure describing the Status information storage and retrieval system which is used on Prime systems.

The four-page publication outlines the advantages ... for Status and describes the basic and advanced ... routines. An example of ... abstracts input form ... included.

BNF Metals Technology Centre, Grove Laboratories, ... Road, Wantage, ... 0235 2992.



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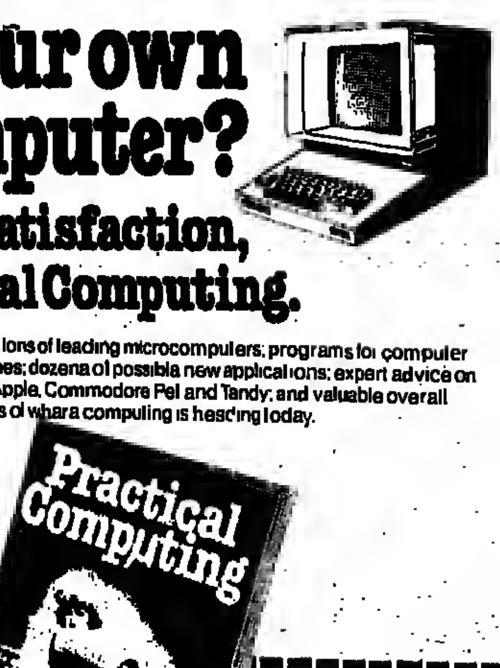

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ADVANCED FILE DESIGN—Part 7

by Owen Hanson and Norman Revell

Optimising structure of indexed sequential files

SEQUENTIAL processing with very occasional direct reference is best handled by a sequentially organised file. Direct files provide the fastest possible response in an inquiry-only system. The very large number of applications that coma somewhera between thesa two extremes, and require a mixture of direct and sequential referenca to data, call for a compromise organisation. Indexed saquential files provide that compromise, so it is not surprising that they are vary widely used. We shall now look at ways to optimise their performance.

Manufacturers' software varies, but ganerally the following facilities are provided:

- Direct retrieval of records by the use of indicas.
- Sequential retrieval, with the opportunity to skip unwanted records.
- Addition of records by the provision of overflow areas, and subsequent sequential processing by the use of link fields.
- Deletion of records, sometimes including physical removal, sometimes merely tagging for later deletion.
- Statistics that indicate when the file needs to be re-organised.

In order to give these facilities, the make-up of an IS file will usually be as follows:

1. A data storage area, possibly containing some spare space for additions. The lowest level index elements may also be included in this area.

2. A separate index or indices. An inquiry will reference these indices first, and be pointed to the appropriate part of the main data file.

3. A separate overflow area.

The provision and position of the indices and overflow areas can dramatically affect file performance.

Indices

In a small file, it might be practical to provide a single index. Any sizeable file is handled by using a hierarchy of indices, each pointing to the next, as this leads to more rapid searching and reduced space usage.

The lowest level index is usually held on tha cylindar it refers to, and references the records on a singla cylinder, or seek area. There is usually an index entry for each track or bucket of the file. In IBM systems this is called the track index. A full index of every record is seldom if ever justified, as it is not possible to control tha precise point on a disc at which the read head will reach the track, so such indices are optional, if they are available at all.

The next level of index will point to the cylindar on which the record is stored. Thare is one entry per cylindar, giving the highest record key on the cylinder, and a scan of the index will allow the next arm movemant to be to the required cylinder to retrieve the record. In IBM systems this is called tha cylinder index.

When this index exceeds three tracks in siza, it is more efficiant to creata a new index, with one entry per track of the cylinder index, rather than just to increase its size.

IBM systems allow up to five levels of index to be creatad; aach is justified when the next lowar index exceeds three tracks in size, and generally the software will build such an indax automatically during file creations.

In referring to a record, the software has to examine two or more indices, and then to saarch the track on which the record is stored. This process is as follows:

1. Refer to the high level index or indices (to locate correct cylinder).

2. Refer to the track index (to determine the correct track).

3. Search the indicated track.

Only the first of these can be optimised. However, as this can cause a long head movement for every refarence, the effect can be very marked. Ways of reducing search time are:

a). To hold the highest index in main storage. If this is the cylinder index, all long head movements are avoided, and times can be improved by at least 50%. Even if only a higher level index still is held in main storage, this can improve average access times by 20% or more, as in this case a single track of the cylinder index has to be searched, not the whole index.

Some manufacturers may allow a part (a half or a third etc, or a similar portion) of the highest level indax to be held in main storage, with a proportionately smaller reduction in average access times.

If the highest level index is too large to be held in main storage, it should be stored on the fastest available device. A fixed head disc or a drum will provide improvements for two reasons. The first is the speed of the device, the second is the fact that there will no longer be contention betwean the cylinder or higher index and the main file area.

If no high speed device is available, a separate device of the same sort as that used for the main fila will reduce head contention, and improve performance.

Failing all of these, the higher level indices will hava to ba stored in the data file area. If the file is on a singla disc pack, the indices should be stored in the centre of the file area. If the file occupies several areas on different discs, and nothing is known about tha frequency of access to these areas, the cylinder index should be placed in the centre of tha smallest file area (and hence, hopefully, the lowest activity area).

When the pattern of accesses to the file is known, conditions change. For a single file area, the cylinder index should be in the centre of the most active area in the file, to minimise head movement. If multiple areas on different packs are in use, the cylinder index should be placed in the centre of the most active part of the least active area. In this way head movements and contention will be reduced to a minimum.

Overflow areas

It is sometimes known that a file will have no additions. In this case no space should be allocated for overflow. Generally, however, additions will be expected. The arrangements that can be made for them are as follows:

1. Space can be left in the file area. This can be either within each track or bucket, at the end of each cylinder, or a mixture of both.

The advantage of this type of overflow is that added records are on the same cylinder as the group of records they belong to.

2. A separate cylinder or cylinders can be set aside for overflow, and additions to any part of the file can be made into this area. Tha advantage here is that little space is wasted. The disadvantage is that a head movement is required to retrieve each overflow record.

3. A combination of both the other methods allows a reasonably small space to be set aside within each cylindar, as overflows from the cylinder will be transferred to the independent overflow area.

The method used will depend on the pattern of additions. We shall look at three cases. These are: Equal, Grouped, or Random.

If thera are equal numbers of additions to each cylinder, no independent overflow area will be required. Diagram 1A shows the situation when four records per cylinder are added to a file that has space for five records par cylinder.

When additions are grouped, the main load is in the independent overflow area. Diagram 1B shows the result, when all the additions are made to three cylinders.

The most typical case is that of random additions, and the file designer should plan on that basis when nothing is known about the pattern of additions. Diagram 1C shows a possible pattern in these circumstances. Both the cylinder and the independent overflow areas are required.

Additions are made in different ways, but the file designer usually has to go along with the software available. The effects of additions techniques will be examined later.

After making decisions on index placement and the strategy to be adopted for additions, the file designer will decide on mode of processing. This will be dealt with in Part 8.

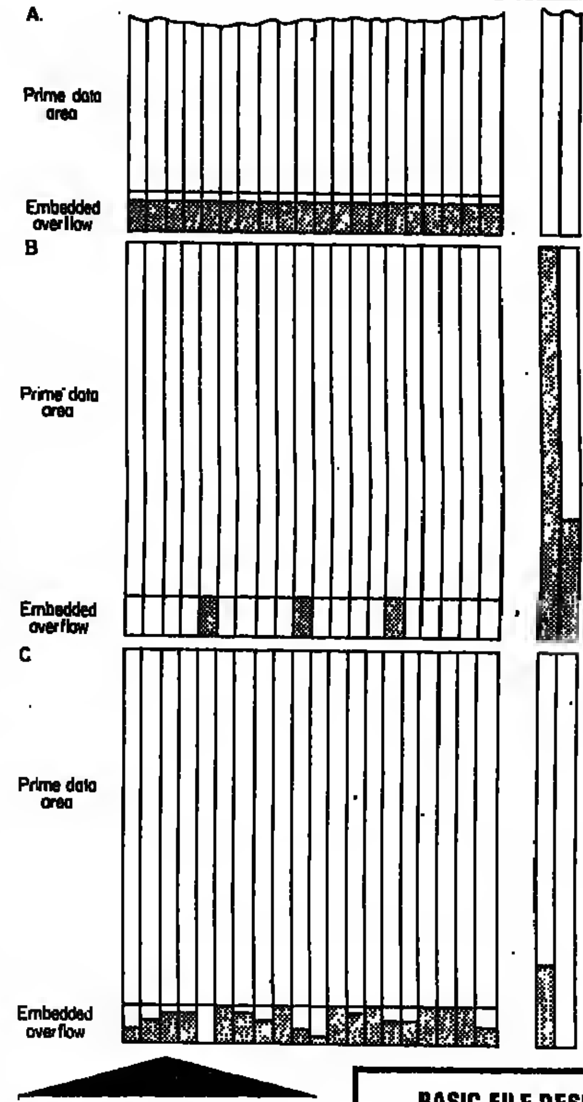

Diagram 1. Three methods of supplying overflow areas. Section A shows the situation when four records per cylinder are added to a file that has space for five records per cylinder; Section B shows the result when all additions are made to three cylinders; and Section C shows a possible pattern when random additions are made.

BASIC FILE DESIGN

A new impression of Basic File Design is now available and copies may be ordered from the General Sales Manager, IPC Electrical and Electronic Press Ltd, Dorset House, Stamford Street, London SE1 9LU. Price £1.80 each including postage.

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The impact of IT

THE personal and social impact of microcomputers and telecommunications technologies are to be studied at a weekend residential course at Holly Royde College, Manchester, on April 18-19. The course has been organised by Manchester University Department of Extra-Mural Studies and it will give an insight into the nature of the technology. No previous technical knowledge is assumed and the main aim will be to indicate the options available to individuals and groups to help shape the way technology is applied.

The course will be given by Malcolm Peltu, former editor of Computer Weekly and a specialist in the application of Information Technology. There will be an opportunity during the course for participants to use a micro.

The course will cost £15 and details can be had from Peltu or Penny Flood on 01-995 1848.

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Norwoy was the homeland of the farefathers of et leeat two glents of the US campufer Industry, Kenneth Oleen, preeident af Digitel Equipment, and Gene Amdehl, architect of the IBM 350 series and founder of the firat manufacturar of big saftware campetible proceasora.

Norwegiens have achleved e graat deal outelde thair country, but there is still plenty of tslent lelt at home, even though computer firme In Norway euffer from the drawbeck of having a vary small domestic market.

The biggest Narweglen-owned computer manufacturer Is Norsk Data, e firm which now covers most of Europe and even hea e presence In the US. But several other computer firms baeed In Norway could meke much mare of an impect In the future In the UK and other overseea markets.

On these two pegea Kelth Jones (left) discusses three of them: Ican, Mycron and Tendbarg Data.

Oslo firm set to rival the major CAD manufacturers

ICAN is a Norweglon company virtually unknown outaide Scandinavia, apart from among those who are In close contact with the world of computer aided design — CAD for short. The company was founded only two years ago and Its workforce currently stands at n grond total of 15.

But Ican's finnnclol snd technical backing looks strong enough to make the compsny a serious potential competitor for bigger and more established CAD systems monufacturers.

Financial backing comes from the Norsk Credit Bank snd slso in the form of an 8% loan from the Norwegian government which Ican only hss to pay back when it becomes profitable. If Icen crashes the company's eight shareholders get out of having to pay bsck the money st all — although they would be unlikely to get anything out of the government in the future for any new venture.

In addition to this loen, which wss provided by the government's board for Industrial growth and adaptation, Ican was slso helped by e no-strings grsnt from the Royal Norweglan Council for Scientific and Industrial Resesrch.

Technical support comes from several Norweglen institutions including Norway's technicsl university st Trondheim where seversl Ican personnel were working before they joined the company.

There are close ties, too, with the top Norwegisn-owned computer manufacturer, Norsk Dsta, which holds a 7% share in Ican.

Norsk Data is also s prospective user of Icen systems and its Nord minicomputers are likely tn be used to host some of the epplications software being developed by Icsn.

Ican's president, Kolbjorn Johannsen, was one of the founders of Norsk Datn in the lete 1960s and left Norsk Data about two years ago tn set up Ican. Johannsen estimates that Ican has 100 potential customers in Norway, Sweden and Denmark, including 30 prnspects.

Ican is also being helped to get off the ground hy two major Norwegian companies which sre providing Ican with its first installations. One is Sinrad A/S, a firm with a workforce of 600 which builds sonur equipment for detecting fish, among other equipment. The nther firm, and much better known outside Scandinevia, is Kongsberg, the £150 million-turnovar Norwegian engineering group.

According to Kolbjorn Johannsen, Kongsberg is interested in instnlling four Ican systoms and its requirements include an interface fnr the Digital Equipment PDP-11/70 and softworc for manipuleting three-dimensional mechanicul graphics. The softwsre will be backed up by nn erithmetlc floating point processor now under development at Icen which will speed up co-ordinate calculation by up to 50 times. The processor will be microprogrammable for optimum performance and will employ tha AMD 2903 bit-slica chip set. It will provide a 32-bit floating point format similer to that on the 16-bit DEC machine.

Existing Ican hardw... cludes two special p... employing the AMD 29... slice set. They are ... memory controller with ... addressing and a 12-bit ... processor for generating ... rscters and handling ... ordinates.

The basic Ican ... driving software, Tiger, ... a Digital Equipment ... under RT-11. The 11/23 ... the role of a controller ... Ican workstation is con... a host such as a DEC or ... Data machine and it c... support stand-alone ope... running the applicatio... ware as well as Tiger.

One application ... already available is Ica... Computer Aided Sche... System, which enables ... to be manipulated inter... in two dimensions. The us... call up the elements of th... gram from a library of ... ponents snd move them ... pen and tablet which ... commands listed on the s...

Tiger can also interface ... high-level graphics pack... like Gino-F and GPGS-F ... latter wss developed at ... Trondheim Technical ... sity snd used widely in ... dinavia, according to ... GPGS-F is said to be more ... uctive than Gino-F.

Ican workstations at ... ment all come with ... vector displays which are ... for line drswings. Within ... users will also be offered ... scan screen.

A new feature being ... duced lster this year is ... display employing the ... tion technique where the ... shown depends on how ... the electron beam ... the phosphor on the ...

Tandberg Data builds ... cluster systems based on ... screens like the one shown ... Tendberg supplies the system ... en OEM basis to customers ... include Siemens, which ... 51% of the Oslo based firm ... mens uses the Tandberg ... basis of a small general ... commercial system called 6.610.

Akershus Castle and Fortress, dating from ... landmarks of Norway's capital.

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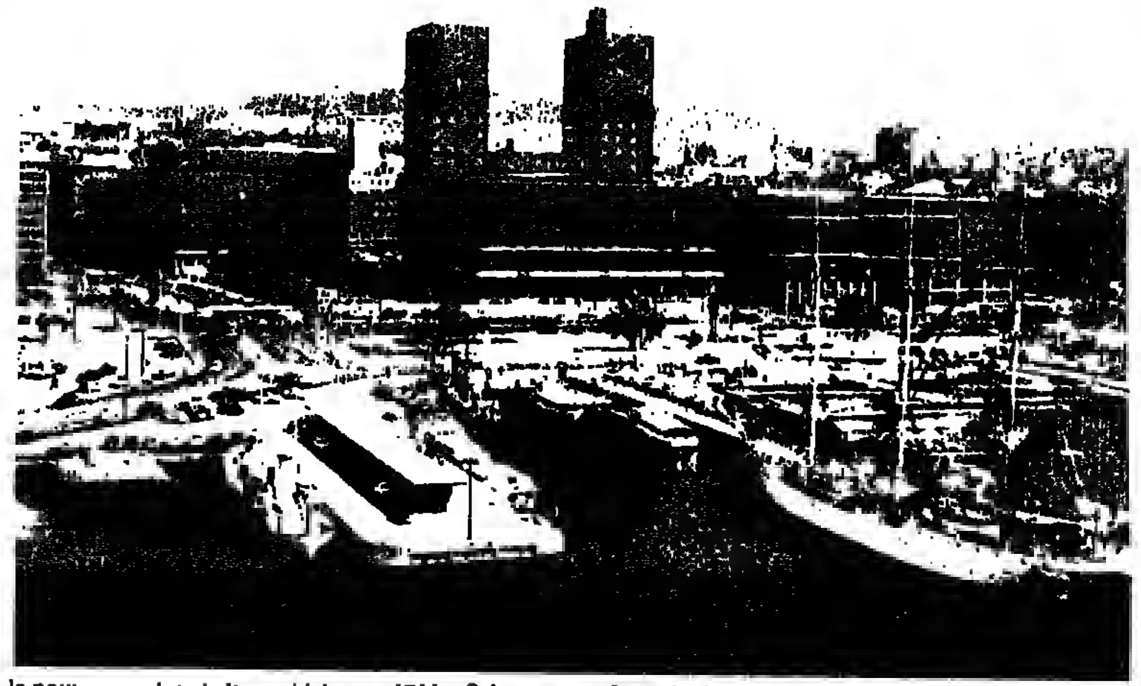
Germans move in with policy of controlled growth



Oslo, as seen from the harbour. On the right is the windjammer Christian Radich, and on the left the veteran steamship Boroyeund.

WHEN the Norwegian government took over the whole of the Tandberg organisetion in 1978 the compeny was in a bad way, mainly because half ite £60 million-plus turnover was still coming from the unprofitable business of eelling domestic colour televisions in a market that was saturated. People were surprised and some suppliers were engered when the government subsequently let the company go bankrupt.

Today the television part of Tandberg is more or less dead while the language laboratory side of the company ia owned by the top Norwegian computer manufacturer Norsk Data operating as an autonomous subsidiary.

The computer equipment side of Tandberg, s mid-1970s spin-off of the firm's TV snd tspe recording activities, was also worth saving, especially for Siemens which wss by far its biggest customer.

So in March last year the West German electrical snd electronics giant took a 51% controlling interest in whst is now Tandberg Dsts, whils the Norwegian government retained the remaining 49%.

Controlled growth with sales expansion, and hence costs kept in close check, is the policy being followed in Tandberg Data's first full year under Siemens' ownership which ends in October. The aim is to make a profit on a turnover of sbout £10 million compared with about £9 million in the previous year. Profitability is regarded as essential for the new company to achieve credibility.

More than 40% of Tandberg Data's output is still being taken by Siemens end this degree of interdependence is expected to persist for another year et lesst.

The compsny's UK distributor, Farnell Instruments, hss done quite a lot of business with the TDC 3000 cartridge tspe drive supplying customers like Ferranti in Edinburgh, end the Post Office which uses the 3000 in System X development work. The Swedish telecoms giant, L. M. Ericsson, is by fsr the biggest customer for the 3000. But VDU products, which now account for 85% of Tandberg Data's total turnover, have not sold well in the UK mainly because they are too expensive for most UK customers.

Farnell hopes that new VDU models unveiled at Hanover Fair this year will be priced more attractively.

But Tandberg says that its existing Teletype compatible VDU, the TDV 2115, is the last low-cost display to be built by the company and thet it is now concentrsting on more sophisticsted VDU products. The TDV-2114 master VDU, for example, incorporated the Intel 8080 microprocessor and can control up to seven slsve VDUs in s cluater cslled the 803X in its OEM form.

The digit substituted for the X in 803X depends on the mainframe terminal that can be emulated. It could be en IBM 3270 or Honeywell VIP. The slave VDUs can be TDV 2115 units or TDV 2116 editing VDUs.

The 803X is sold by the Siemens Besic Informstion Systems division ss the 6.610 small commercisl system. Siemens has written s wide range of spplications software for the system while Tsndberg provided the besic 803X softwsre like the disc opersting system, TOS 21, a commercial Bssic interpreter and Cobol. The latter is CIS Cobol from Micro Focus.

Tandberg elso sells a much bigger system called the TDS 8010 which is configured sround a Philips P800 series minicomputer snd which can support up to 23 slsve VDUs.

Tandberg's workforce currently stsnds et about 250 and the company is shipping TDV 2114 masters et e rate of about 1,500 s year. Shipments of the 2115 snd 2116 are running at 2,500 and 1,000 o year respectively.

Multiprocessor this year based on Intel 8086

A MULTIPROCESSOR system employing the 18-bit Intel 8086 microprocessor is to be launched later this year by Mycron. This Oslo-based firm started off by attacking the process control market, but has now decided to concentrate on the commercial sector.

Mycron moved out of process control because of fierce competition from low-cost US process control equipment and this decision led to the termination at the end of 1979 of its agreement with its UK distributor Euro Electronic Instruments.

The main hardware offering at the moment is the Mycro-3, s system configured around s single CPU employing the Zilog Z80.

Mycro-3 systems are now being supplied to the Norwegian government for various non-technical type applications, including the maintenance of vacancy files at labour exchanges. To counteract suggestions that it is being supported by the Norwegian government, Mycron pointa out that the government has no preference policy as far as computer equipment acquisitions are concerned, and that in any case it is about to introduce accounting softwsre that will spearhead a marketing offensive in the private sector.

A Mycro-3 with 64K-bytes of main memory, dual floppy disc drives and one VDU costa about £10,000 complete with software that can include Pascal, Fortran, Basic and PL/Mycro, which is compatible with Intel's PL/M. Options include emulators for the IBM 3270 and 3780 terminals and a communications processor for the X21 circuit switched protocol.

The multiprocessor system employing the Intel 8086 will probably be called the Mycro-10 and will run under MP/M, the multi-user veraion of Digital Resesrch's CP/M operating system. Lsngusges to be supported will definitely include Pnscel and probsbly also PL/Mycro, but no decision has been made yet on Basic or Fortren. MP/M will provide the opportunity for other lsnguages to be supported.

An OEM version of the Mycro-10 with MP/M and Psscal should be svailabls for delivery st the end of 1980, and next year applications packsges ahould be ready for accounting, word processing and data entry.

The most interesting hordware feature of the Mycro-10 is what Mycron cells the high-level bus which can connect up to four complete single card mochines meking inter-machine file access possible, but not high volume file transfers. Each mechine includes an 8086 CPU, an 8K Eprom, 128K-bytes of RAM with parity and six serial and two parallel I/O chennela.

All these componenta are hung on to an internal bus which in turn is connected to the high-level bus. Tha intarnal bus can alao be axtended to an add-on memory cerd thet takes tha meximum memory size up to 512K-bytes. Thus the biggest Mycro-10 will heva eight cards and up to two megabytes of mein memory.

Hard disc storage will coma in the form of Winchester drives with integral controllars that will eliminate the need for a seperata controller card. Each machine will run its own copy of MP/M.

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Products sre listed under 107 classificstions of systems and applications softwsrs. The table balow shows ths main groupings snd tha numbsr of products listed in esch group.

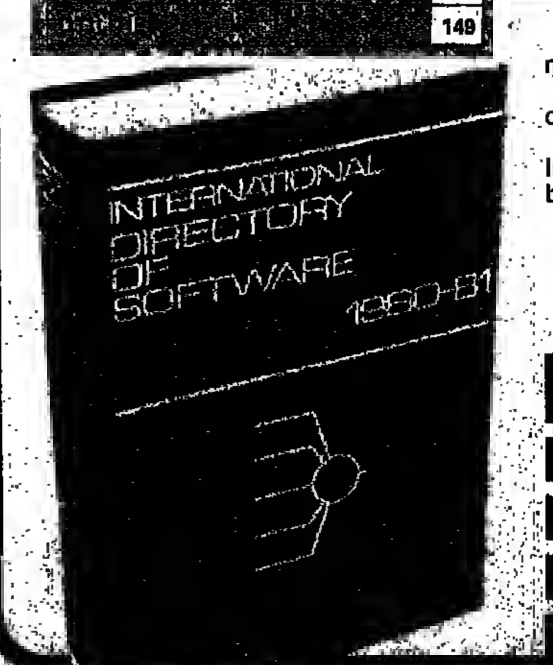
SYSTEMS SOFTWARE	
COMMUNICATIONS	111
[illegible]	65
DATA MANAGEMENT	273
[illegible]	213
[illegible]	223
[illegible]	107
[illegible]	149

APPLICATIONS SOFTWARE	
[illegible]	1356
[illegible]	109
[illegible]	77
[illegible]	405
[illegible]	136

Specimen Entry
Data on each product is presented in a disciplined format enabling you to pick out the salient factors in each entry at a glance.

Q-PAC - Payroll & Personnel System
Category: (57) Payroll, also (58) Pensions (60) Personnel
USA Supplier & terms: Q PAC America Inc. $20,000 to $40,000. Maintenance 10% pa. Leasing $800 to $800 per month. Minimum rental period 1 year
UK Supplier & terms: Q-PAC Services Limited £4,000 to £12,000 5 years usage. Maintenance 8% pa. Leasing £150 to £400 per month. Minimum rental period 2 years
Terms elsewhere in Europe: As UK
Developer: Q Packaged Programs
Description: A flexible payroll system with different requirements and ... parameters ... Parameters provide powerful calculation facilities enabling complex up-to-gross and bonus calculations to be easily made. Input forms are also parameterized, thus new users can utilize existing documents when they introduce Q PAC. A range of standard reports is produced and tailored reports are produced using the report writer. Record layouts are provided for costing and general ledger interfaces as well as special report requirements. Package includes facilities for payroll personnel labor costing report writing statutory requirements management reporting. Product can be easily maintained for all income and social security taxes.

First operational: 1969
No. of users worldwide: 500+
No. in UK: 400+ No. in USA 100+
Batch mode: Yes Real-time.
Interactive mode: Yes
CONFIGURATION REQUIREMENTS
IBM 360/370/30/4300 series 64Kb OS/DOS/MVS
ICL 1900 series/2903-4 24Kw George
ICL 2900 series VME/OME
Other computers by arrangement
Paper tape, card disk, mag tape input
No. of programs: 27
Languages: Cobol
DOCUMENTATION SUPPLIED (in English)
Manuals: Users, systems operations
Layouts: Report, record
Source code supplied: Yes.



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Appointments

THE NEWSPAPER COMPUTER PEOPLE RELY ON

Appointments

COMPUTER WEEKLY

Classified Department, Oarsat House, Stamford St, London SE1 9LU

Box Numbers: Should be addressed to the box number in the advertisement c/o Computer Weekly at the above address.

Classified Rates: £13 per sccm.
19 x 3 cols = £740. 38 x 3 cols = £1,250.
Half Page (19 x 7 cols) = £1,300.
38 x 4 cols = £1,620.
Full Page (38 x 7 cols) = £2,000.

Copy Deadline: 3.30 pm Monday prior Thursday publication date. Complete artwork up to 11 am Tuesday. Advanced space reservation is advisable.

LONDON
Assistant Classified Manager:
Chris Prior 01-261 [illegible]
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Ken Watford 01-261 [illegible]
Neil McConnell 01-261 [illegible]
Vic Sharat 01-261 [illegible]
Denise Smith 01-261 [illegible]
Ian Faux 01-261 [illegible]
Julia Hannelard 01-261 [illegible]

MANCHESTER/GLASGOW
Owen Kelly 061-872 [illegible]
Geoff Aiken 061-872 [illegible]

BIRMINGHAM/BRISTOL
Stan Harris 021 [illegible]

Technical Support Analyst

West London/ Berkshire — **To £9000 + Benefits**

Our client is a highly successful multi-national company which utilises IBM mainframes, together with mini-computers in a variety of configurations throughout the world.
The company is seeking a Technical Support Analyst to further strengthen the support service provided at one of their major computer centres.
Key responsibilities will include
- Advice to computer centre users on efficient use of hardware and software resources.
- Monitoring and evaluation of technological advances.
- Assistance to users in the solution of complex technical problems.
- Liaison with other computer centres, both within and external to the company.

Ideally, the successful candidate will:
- Have an in-depth working knowledge of IBM OS software.
- Preferably have some knowledge of teleprocessing and time sharing services.
- Be able to demonstrate flexibility, initiative and self-motivation in a demanding environment.
- Be skilled in communication with technical and non-technical staff.

This position offers:
- An outstanding opportunity to gain valuable experience on a wide variety of configurations.
- Numerous and varied career paths in a company dedicated to staying at the forefront of technology.
- Excellent salaries and benefits including, where necessary, relocation expenses

To apply for this exciting position, telephone Andy Cousins, quoting Ref. AC 2998.

Lloyd Chapman Associates
123, New Bond Street, London W1Y 0HR 01-408 1670 (173)

The Polytechnic of North London

PROGRAMMERS/ SENIOR PROGRAMMERS
User Advisory and Systems Software

Our support services to students and staff, covering a wide range of disciplines and applications, are expanding. Varied and interesting experience can be gained and some specialisation is encouraged.
On the systems side we offer in-depth experience of interactive software and opportunities to develop a network.
The main computer is a Dec-10 KL processor with 512K words, 600 megabytes of disc storage and a full range of peripherals, including graphics, and supporting over 100 active user jobs.
A good range of microcomputer hardware is also available.
Salary on scale (including London Allowance): Senior Programmers up to £8114.84; Programmers up to £5878.64.
For posts at Programmer level depth of experience is less important than ability and enthusiasm.
Applicants from commerce or industry welcome.
Further information and application form from the Head of Computing Service, Polytechnic of North London, Stapleton House, Holloway Road, London N7 8DB.
Tel: 01-607 2789 Ext. 2396. (236)

QUEEN MARY COLLEGE
University of London

COMPUTER SYSTEMS

The College is establishing a Microprocessor Teaching Centre, to be run jointly by the Departments of Electrical and Electronic Engineering and of Computer Science and Statistics. Applications for two Lectureships associated with the Centre are invited from graduates with a background in computer science and/or microelectronics. The successful applicants will be required to contribute towards an integrated approach to the hardware and software of computer systems and their applications in systems engineering. Salary scale £6062-£10484 p.a. plus £740 London Allowance. Further details and application forms available from The Secretary, CW, Queen Mary College, Mile End Road, London E1 4NS, to be returned by 18 April.

(184)

"COMPUTER PERSONNEL

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In the fast expanding world of computer technology plum jobs suddenly blossom onto the market. We at SELECTRON are often the first to know. 10,000 companies maintain contact with us. That means we can sound the market *specifically* for your job requirement and salary demand. By using the Selectron direct response consultancy you cut out *hours* of wastage. No unnecessary interviews, no travelling to see us. Simply fill in the coupon and send us your C.V. If you prefer we will send you our Career Summary form. Within days we guarantee a highly rewarding response. And in the privacy of your own home you select the plum offers. As intelligent computer personnel would expect, our service is free, confidential and without obligation. Write to us now.
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Full Names _____ Age _____
Address _____
Town _____ Post Code _____ Tel No. (std) _____
Present Position _____ Position required _____
Principal job skills (tick) Salary _____

☐ Systems analysis ☐ Electronic Design ☐ Electronic Engineering
☐ DP Management ☐ Programming ☐ Sales Software

INFORMAL INTERVIEWS RING (01) 439 3410

DP Professionals for Management Consultancy

Up to £12,500

Our clients are expanding their data processing capabilities with a new project starting up in the MANCHESTER/LIVERPOOL/NORTH WEST area. TEAM LEADERS, SYSTEMS DESIGNERS and SENIOR PROGRAMMERS are required on a permanent basis to take on responsible positions.

As Consultants, their work includes most aspects of data processing from application design through to systems software. Generally their work involves solving problems with multi-discipline teams, where opportunities exist for broadening or increasing your depth of knowledge.

They can offer interesting and varied work where personal fulfilment can be achieved whilst improving your professional status.

On completion of this project, they can offer considerable opportunities both in the UK and overseas.

Salaries are fully negotiable, depending on age and experience.

Interviews will be held locally over the next fortnight — to arrange a meeting, please ring James Walker on 01-439 3410, or write to him at Austin Knight Limited, London W1A 1DS.

AK Austin Knight

GMC — Greater Manchester Council

COUNTY ENGINEER'S DEPARTMENT

ANALYST/PROGRAMMER — SO 1/2

£8721 / £6627 p.a. (award pending)

The Department operates a PRIME 400 Mini-Computer which provides a terminal service to all groups within it. The person appointed will assist in the development of technical and management information systems.
Applicants should preferably possess a degree in a numerate discipline and have at least 3 years' Fortran programming experience.
Conditions of service include removal, legal etc. expenses up to £750; lodging allowance; 26 days' annual leave + 8 statutory holidays.
Application form, job description and further details available from the County Personnel Officer, County Hall, Piccadilly Gardens, Manchester M60 3HP. Tel: (061) 247-3328/9. Closing date — 8th April. (242)

JOIN THE MICRO COMPUTER REVOLUTION

MICROSENSE COMPUTERS LTD., Finney Road, Hemel Hempstead is a new division of a well-established company. After only one year's trading Microsense has become a leader in the U.K. Micro Computer business and has a turnover of £6M plus. We are growing at a fantastic rate and good people are required to join the current staff of 25 and assist in its continuing expansion.

The main personal qualities for the following appointment is the ability to work under pressure, enthusiasm, and a strong sense of responsibility and initiative. The future career prospects will be linked to growth and you will command an excellent salary. Please seriously consider the following appointment:

ASSISTANT TO DEALER MANAGER

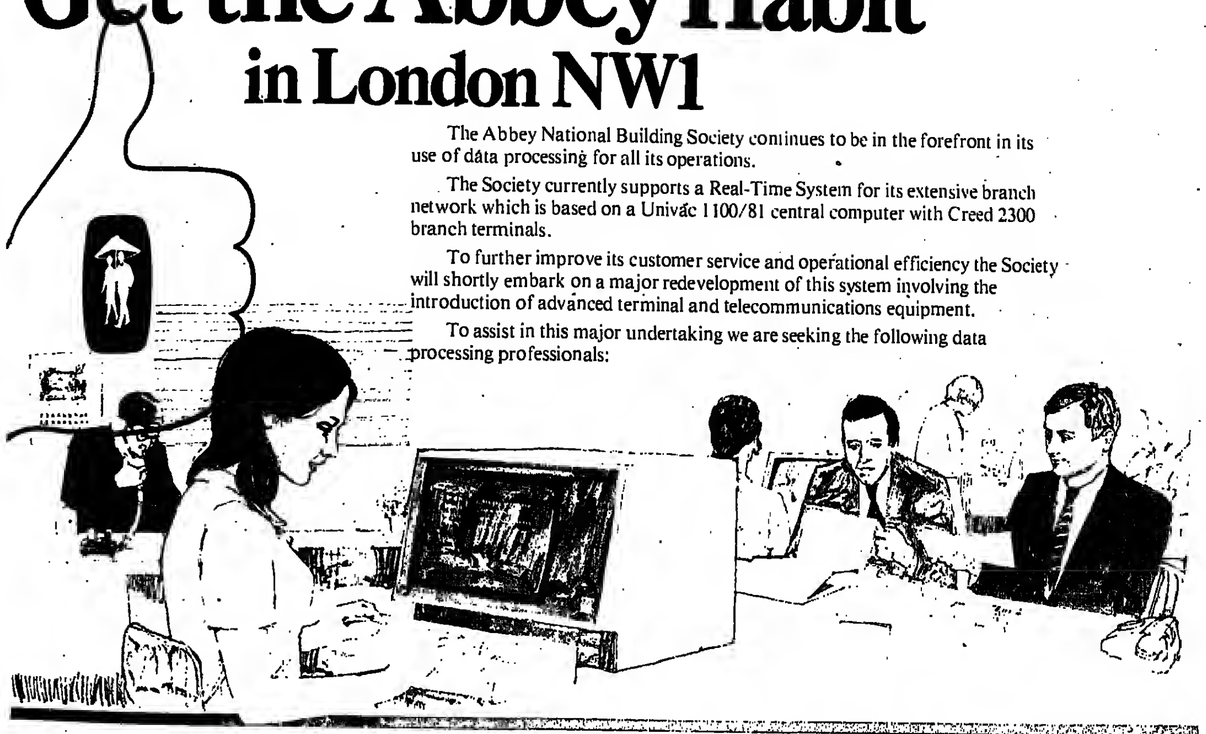
who selects, services, and consolidates the national network of dealers for microcomputers, involving field contact, occasional demonstrations and the identification of business opportunities.

You would be expected to deputise for the Dealer Manager in all the above areas. Experience in the electronics or office machine market or related areas would be a distinct advantage. Age preferably 25-35.

Please telephone for an application form to:
Mrs. S. Shannon
Data Efficiency Ltd.,
Maxted Road, Hemel Hempstead
Tel: 0442 63861

DE

'Get the Abbey Habit' in London NW1



The Abbey National Building Society continues to be in the forefront in its use of data processing for all its operations.

The Society currently supports a Real-Time System for its extensive branch network which is based on a Univac 1100/81 central computer with Creed 2300 branch terminals.

To further improve its customer service and operational efficiency the Society will shortly embark on a major redevelopment of this system involving the introduction of advanced terminal and telecommunications equipment.

To assist in this major undertaking we are seeking the following data processing professionals:

Systems Analysts

(SALARY UP TO £9,000 p.a.) and benefits including preferential mortgage terms

This is a unique opportunity to join a young and dynamic Systems Department and progress your career in the areas of Real-Time, advanced terminals and database applications. Ideally you should be a graduate, under 30, and have at least 2 YEARS SYSTEMS ANALYSIS experience preferably in a financial environment.

Essential personal qualities include a sound business acumen, good communicative skills, and above all the drive and stamina necessary to implement projects within tight deadlines.

Systems Programmers

(SALARY UP TO £9,000 p.a.) and benefits including preferential mortgage terms

The successful applicants will have a challenging role at the heart of our Central site developments which will encompass major changes to our communication processing and Real-Time applications.

As such the applicants must be highly self motivated and should possess at least 2 YEARS UNIVAC ASSEMBLER PROGRAMMING EXPERIENCE and a sound knowledge of UNIVAC Job Control language.

Some practical knowledge of one or more of the following would be advantageous:
1. Communications—CMS; TIP; TELCON
2. Database—DMS 1100; RPS; QLP
3. Operating System—OS 1100/EXEC 8.

Application Programmers

(SALARY UP TO £8,000 p.a.) and benefits including preferential mortgage terms

The successful applicants should have a sound education, be preferably under 30 and possess the character and ambition to progress their career rapidly.

The work is challenging and offers rewarding prospects for those applicants who show the aptitude and flair for involvement in all stages of project development.

At least 2 YEARS APPLICATION PROGRAMMING experience on mainframe or advanced terminal systems is required. Any practical knowledge of structured programming or database techniques would be advantageous.

Interested?

In addition to the advantageous mortgage rates, benefits include excellent pension scheme, subsidised BUPA membership, season ticket loan, 21 days annual leave, social amenities etc.

For further technical information about these jobs please telephone **Rob Farbrother**, Deputy Manager of our Systems Dept. on 01-486 5555 Ext. 3393.

For an application form telephone or write to:

Mrs. F. H. Wakefield
Senior Personnel Officer
Abbey National Building Society
27 Baker Street London W1. Tel: 01-486 5544 Ext. 352

ABBEY NATIONAL

Technical Programming Manager

City of London **c. £10,000**

Our client is one of the largest and most respected firms of Chartered Accountants in the world, with a long established team of EDP audit specialists.
They wish to recruit a Technical Programming Manager to head a small team developing special software, investigating current and future operating systems and languages, and solving a variety of technical software problems. This is a unique appointment with a high degree of individual responsibility.
The successful candidate will be at least in his/her 30s, have a strong experience in both low and high level languages and be conversant with several manufacturers' operating systems. A knowledge of package development and implementation, possibly in a software house environment, would be an advantage.
The benefits package and working conditions are attractive and you will be working in a very stimulating, challenging and professional environment.
This is a long term career role within a very successful team of specialists. To discuss it in more detail telephone Morley Holliday, or write quoting reference MGH 2848.

Lloyd Chapman Associates
123, New Bond Street, London W1Y 0HR 01-408 1670 (208)

Computer Sales Engineers Field Engineers Technical Support Engineers

System Industries is a Californian Corporation active in the mini-computer peripheral business with offices in Woking, UK, Germany and Scandinavia.

As part of our continuing expansion programme we are looking for experienced engineers in the above fields. Successful applicants will be based at our Woking office. These positions offer outstanding career opportunities for competent self-reliant Engineers for all positions. A Company car is provided plus exceptional employee benefits.

SALES ENGINEER
To be responsible for selling our Company's product range throughout the South of England. The selected candidate will have a successful track record in either OEM or End User Sales in the mini-computer/peripherals sales area. Earnings in excess of £16,000 p.a. can be anticipated.

FIELD ENGINEERS
To be responsible for installing and servicing our Company's products throughout the whole of the UK. Some European travel will be required. The selected candidates will have at least two years experience in the maintenance of DEC or DG minicomputer systems. Experience with Disk, Tape and Memory Sub-systems will be a distinct advantage. Initial salary will be in the range of £8,500 to £9,500 depending upon experience.

TECHNICAL SUPPORT ENGINEERS
To be responsible for providing software and systems support to our expanding field service group and customer base. Travel throughout Europe with occasional trips to USA will be a predominant feature of this position. Successful candidates will be familiar with a variety of mini-computer Disk Operating Systems and be capable of providing in depth systems support. Initial salary will be in the range of £8,000 to £10,000 depending upon experience.

We will be holding informal evening interviews at The Runnymede Hotel on the 24th, 25th and 26th March 1980.

For further details and an appointment please ring Prue Birkingshaw on Woking (04862) 5077.

System Industries
System Industries (Europe), System House, Guildford Road, Woking, Surrey 01/22 700

Cambridge City Council
SYSTEMS ANALYST
(Re-Advertisement)
(Salary up to £6,090, with Comparability Award pending)

An additional Systems Analyst is required to join a small team within the City Treasurer's Department. The Council operates an ICL 2904 with EOS 60s and two 7502s serving enquiries and ICL's new Counter Terminal System.
The main development in the next two years will be a Management Information System running under Database Management Software. Further information is obtainable from the Computer Manager, O. Smith, (0223-358977 Ext. 284).
Relocation and assistance with housing accommodation are allowed in approved cases. Other benefits include flexitime and staff restaurant.
Applications giving full details of experience and qualifications and naming two referees must reach the undersigned by Monday 31st March 1980.
Previous applicants need not re-apply.
City Treasurer, Guildhall, Cambridge CB2 3QJ. (138)

BOX Nos.

Box number replies should be addressed to:

Box No. ....
c/o Computer Weekly
Dorset House
Stamford Street
London SE1 9LU

ELECTRONICS ENGINEER

£8,000 + WOKING, SURREY

Young (20s) Electronic Engineer with knowledge of Mini Computers and experience in digital design and VDU generally, sought by friendly company in old Woking, Surrey
Company is involved with Micro Processors and Micro Computers.

Ring Aldan Personnel Weybridge 52935 (145)

ATTENTION WEST MIDLANDS,

THE GREAT LORIEN JOB FAIR IS IN TOWN AGAIN

so many LOCAL jobs to choose from

Discuss your career now with our computer professionals. We can advise you on the full range of opportunities available in the area for PROJECT LEADERS, SYSTEMS ANALYSTS and PROGRAMMERS with a minimum of 6 month's experience

You are invited without obligation and our service is FREE. Simply come along to the following hotels between 4.00 p.m. and 9.00 p.m. on the days shown.

MONDAY
24th March
Walsall Crest Motel
Birmingham Road,
WALSALL

WEDNESDAY
26th March
St. Johns Hotel
Warwick Road,
SOLIHULL

TUESDAY
25th March
Birmingham Centre Hotel,
New Street,
BIRMINGHAM

THURSDAY
27th March
De Vere Hotel
Cathedral Square,
COVENTRY

"If you're considering a move then you should contact Lorien first."

LORIEN COMPUTER SERVICES
Recruitment Consultants
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Telephone 0532 444185
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ICL expertise-Abu Dhabi-Tax Free

EDP SUPERINTENDENT (DPM)
c. 9000 UAE DIRHAMS/MONTH-TAX FREE
(EQUIV. £13,000/ANNUM)

Head up new EDP installation for dynamic affiliate of major U.S. firm.

* Establish and organize EDP function including resources, budget.
* Develop and implement equipment and integrated systems plans in conjunction with senior management policies and user requirements in a sales and service environment.
* Direct the EDP systems, programming and operating functions.
* Liaise with Affiliate Partner for effective, co-ordinated EDP effort.

REQUIREMENTS:-
• Strong ICL background–COBOL; Data Base.
• 5+ years high calibre systems analysis.
• Successful involvement with inventory, sales, accounting/financial applications.
• Experience/capability directing a team of EDP personnel and development function.
• Highly motivated, self starter.

PROGRAMMER/ANALYST
c. 8000 UAE DIRHAMS/MONTH-TAX FREE
(EQUIV. £11,500/ANNUM)

Immediate programming requirement in challenging environment.

* Identify application modules.
* Develop program specifications.
* Program, test and implement integrated applications using ICL–COBOL.
* Develop procedures.
* Train users.

REQUIREMENTS:-
• 3+ years solid COBOL experience preferably with ICL.
• 1-2 years good analysis experience.
• On line expertise desirable.
• Accounting/finance, inventory, sales, management reporting experience all helpful.
• Motivated, self starter.

OUTSTANDING BENEFITS: tax free salary, furnished accommodation, annual return air tickets, automobile allowance, free medical care, married status, schooling assistance, 48 day annual leave, renewable contract status.
Reply immediately to:
Tony Buswell, Employee Relations Dept. (Ref. C380) NL Petroleum Services, 35/36 Grosvenor St., London W1

Experienced sales executives

Basic salary c £8,000 On Quota £15,000 plus Company car or Allowance

If you feel ready to move in on the ground floor of something BIG then call to-day.

Our client is the well known Business Computer and Data Processing Division of an INTERNATIONAL GROUP OF COMPANIES operating in high technology areas throughout the world.

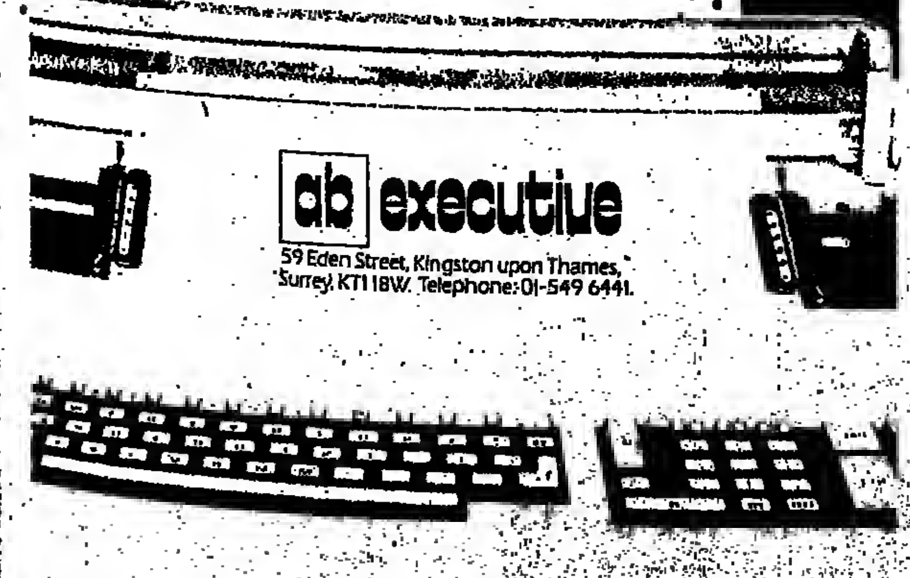
THE DIVISION IS
YOUNG–
AVERAGE AGE UNDER 30
EXPANDING–
50% ANNUAL GROWTH IN TURNOVER IN THE LAST 3 YEARS
AND HAS
OFFICES THROUGHOUT THE UK

They are part of a UK company which has a turnover in excess of £650M and employs over 40,000 people.

Their products are well known and established in the fields of Business Computers and Distributed Data Processing with Multi-Tasking Software and Word Processing capability.

Their commitment to the UK is total and in order to maintain their growth rate they are offering tremendous opportunities to experienced Sales Executives throughout the UK, with a particular urgent requirement in the North of England and Scotland.

YOU WILL ENJOY:
* **Generous Basic Salary**
* **Outstanding Commission Rates (up to 15%)**
* **Proven Systems (4000 installed base)**
* **Realistic Quotas (only 4 systems in some cases)**
* **Company Car or Car Allowance**
* **And unrivalled Management Opportunities based on continued planned growth.**



JBA

Central Software Manager

Holland **Salary Negotiable (high)**

A prestige, high level position with this International mini-computer manufacturer at their Dutch headquarters. The job will be to take **total** control of all software activities for the Netherlands, including budgets and business administration. The products range from personal use mini computers to 1M Byte medium range machines, encompassing software in the form of commercial packages to dedicated, technical engineering programs. Communications feature strongly in their repertoire.
Candidates **must** have a very intense and varied software background and a sound commercial, business mind. A strong personality is called for together with a results–orientated outlook to work and staff achievement.
Excellent package and relocation deal. Interviews in London at end of March.
Contact: Mike Creamer

Systems Programmers

Germany **£16,000 – £22,000**

Systems Programmers with from 3 years experience upwards of OS, VM or MVS are in great demand in Germany, and our client – a German contract software house – has a number of opportunities available in various locations for experienced staff. Knowledge of German is NOT a pre-requisite, since technical ability is paramount. Assignments will be for a minimum of 1 year.
Contact: Andy Wright

UNIVAC Database Design

Holland/Germany **from £18,000**

A number of excellent opportunities in both Holland and Germany are currently available for Analysts and Designers who have had sound experience of working with DMS1100 or DMS90 databases. Naturally, the more intimate your knowledge of one of these dbms's, the more valuable you will be – salaries up to £22K are available in Germany!! **Contact: Andy Wright**

Middle East

Systems Programmer **£14,000 Tax Free**
Plus company car & free accommodation and more

This position is a permanent staff job with a major distribution company at its M.E. headquarters in Saudi Arabia. The site is on the coast of Jeddah where ample opportunity exists for sailing, swimming and scuba-diving, etc. An active social scene awaits the successful candidate.
The machine is an IBM 370/115 DOS/VS running batch systems with on-line processing planned for early 1981 when a 4341 will be delivered. Languages used are RPG2 and COBOL. Systems Programmers must have at least 2 years DOS/VS experience, a good exposure to CICS and preferably VSAM.
Conversion to VSE is planned. **Contact: Mike Creamer**

Bureau Sales

West Yorks **Earnings c. £10,000 + Car**

A large organisation offering a comprehensive range of bureau services, on main frames and micro computers, requires an additional person to join an established sales team.
Applicants should have a sound computing background and a professional attitude.
Previous experience of sales in the computing industry is essential.
Contact: Bev Stevens

Software Team Leader

Bedfordshire **£8,000 – £10,000**

A large manufacturing organisation, producing general purpose and specific computer systems, requires an experienced software person to head up a team in the product introduction area.
The software products encompass a wide range of software, including operating systems, compilers and applications related systems. The team leader will be responsible for progress monitoring, ensuring standards are maintained and integrating new products into existing operating systems.
Systems programming skill is preferable. **Contact: Mike Creamer**

Industrial Systems

Berkshire **up to £7,500**

A small but expanding systems house have opportunities for Programmers, Analyst/Programmers and Consultants to work on the development of real-time Industrial applications.
Applicants must have at least two years industrial or process control applications experience using high level languages. A formal qualification preferred but not essential. Salary according to experience. **Contact: Jim Baker**

Scientific Software

Derbyshire **c. £6,500**

Midlectron Ltd, suppliers of computer systems and terminals based on DEC LSI processors, require a Programmer to assist in the development of special purpose applications.
Applicants should have a good scientific or mathematical qualification and at least 2 years programming experience using FORTRAN or ASSEMBLER with RT11 or RSX-11-M. Previous experience with COLOUR GRAPHICS or PASCAL would be an added advantage.
A "ground floor" opportunity in an excellent new working environment.
Contact: Bev Stevens

**JAMES BAKER ASSOCIATES,
International Personnel Consultants,
32 Savile Row, London W1.
Tel: 01-439 9311.**

AVIONICS — SCIENTIFIC PROGRAMMERS

SALARIES £6,000-£12,000
LONDON/HOME COUNTIES/SOUTH

We have a large number of openings for people with scientific or avionics expertise. These opportunities are wide and varied and some involve a proportion of overseas travel. Candidates should hold a degree in a scientific discipline and have experience in some of the following areas:

SOFTWARE DESIGN ★ REAL TIME MINI/MICRO SYSTEMS ★ AVIONICS & DEFENCE SYSTEMS ★ ASSEMBLY LEVEL LANGUAGES ★ FLIGHT SIMULATION ★ MATHEMATICAL MODELLING.

Those appointments are placed throughout the above locations and all are with reputable established companies. For further details please contact Mike Howard.

SURREY/SW LONDON

SYSTEMS ANALYST
£7,000-£9,000

SENIOR PROGRAMMER
£6,000-£7,500

JUNIOR SYSTEMS PROGRAMMER
£6,000-£7,500

This is without doubt an exceptionally good time to team up with a progressive installation based in NW Surrey. Consider the following:

- ★ New IBM 4341 4MB due soon
- ★ New Database and TP projects
- ★ New word processing system in use
- ★ Current environment IBM 370/148, DL/1 CICS, PL/1, MK.IV, APL
- ★ Car/mileage allowance, parking and generous holidays
- ★ A relaxed and friendly professional atmosphere.

The above reflects the current status of a challenging environment. Full training is provided in order that you may fully exploit the system potential and career prospects.

All candidates should have relevant experience.

For further details please contact Eddie Howard.

SENIOR DESIGNERS

LONDON/HOME COUNTIES to £11,000

We are recruiting on behalf of a highly-successful software consultancy who are part of a leading American Software Engineering Company.

They are currently in the process of establishing their second UK office to the north of London and consequently have a requirement for professional personnel who are conveniently located to north London or Middlesex.

Ideally, candidates will have a science or mathematical degree and experience in one or more of the following:

★ Navigational Aids ★ Flight Simulation
★ Telemetry ★ Signal Processing
★ Process Control ★ A.T.E. Robotics
★ Data Communication ★ Operating Systems
★ Compilers ★ Graphics

This is a unique opportunity to join a young, dynamic organisation where creative effort is highly rewarded and employees are recognised as individuals.

For further details please contact Eddie Howard.

Edmund Howard & Partners

5 Brighton Road, Surbiton, Surrey, England. Tel - 01 399 9183

(243)

MICHELIN

SWITCH TO MICHELIN SENIOR ANALYST—PROGRAMMER

MANAGEMENT SERVICES DEPT., LONDON, S.W.3

Michelin, the leading British radial tyre manufacturer, wish to recruit a Senior Analyst Programmer to be a project leader, with direct responsibility for the analysis, design and programming of Commercial Computer Systems.

The work involves some liaison with the main-home installation at our Stoke-on-Trent Manufacturing Headquarters and Commercial offices throughout the U.K.

Good experience of analysis and programming essential. Sound training in programming on manufacturers or equivalent courses is essential, which should have included COBOL.

Age range: ideally over 25 years with a minimum of 5 years' experience on Honeywell/IBM/ICL Computer equipment in an Industrial/Commercial environment.

Michelin offer an individually negotiated salary to attract the calibre of Senior Analyst-Programmer required; five weeks' paid holiday plus statutory holidays; free life assurance and contributory pension scheme.

Above all we offer a career associated with first-class products renowned for their quality, together with effective Personnel Policies.

Please write in confidence giving details of age, work experience, qualifications and current salary to:

The Personnel Manager—Commerce
(Ref. JFG/SA/1/80)
MICHELIN TYRE CO. LTD.
81 Fulham Road, London SW3 6RD
or Telephone 01-588 1460 for an application form.

(248)

★ HONEYWELL ★ ★ LEVEL 66 ★

Long term contracts in the North West and North East
Contact Ken Grimsley on 0742 25069
Fraser Williams, 81 James House, Vicar Lane, Sheffield, S1 2EX

Fraser Williams Computer Consultants

LONDON ST ALBANS LIVERPOOL LEEDS MANCHESTER POYNTON BIRMINGHAM SHEFFIELD GLASGOW TORONTO NEW JERSEY

Systems Staff

up to £10,000
An exciting time to join Sangers

Our record of service goes back 200 years and since our formation we have grown steadily to reach our present position as Britain's leading distributor of products to the pharmaceutical, photographic and grocery trades, retail optical practices and with a growing agency division.

We're now a group with annual sales exceeding £100 million and with the continuing development of our operations and the establishment of new divisions, we're now embarking on an exciting and far-reaching programme of expansion in data processing and are working towards an extensive distributed processing environment.

At present we have an IBM 370/145 but this is being replaced shortly by an IBM 4300 together with IBM Series 1 mini-computers for on-line local control and direct entry of orders from customers' premises. It's a challenging task and to assist us in developing and implementing the complex new systems we now require men and women as:

Senior Systems Analysts/ Project Leaders

To lead project teams and be responsible for implementing systems within a defined area of business. This will involve close liaison with Systems Development management and will carry responsibility for leading a team of Analysts and Programmers. It calls for an essentially 'hands-on' approach together with a broad knowledge of business systems and practical experience of systems analysis. A knowledge of distributed processing techniques would be an advantage.

Systems Analysts

Appointments are to be made at several levels in project teams working on the installations of systems on both the Series 1 and main-frame computers. Sound systems analysis experience is essential, preferably coupled with a programming background. Alternatively, an experienced programmer looking for an opportunity to move into systems analysis might also be considered.

Our DP Department is pleasantly situated in an attractive area of rural Cambridgeshire yet is within 45 minutes of London by train. Housing is easily obtainable and relatively inexpensive.

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£6620-£6937
(Comparability Award Pending)

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The post involves the supervision of four staff on a single shift system.

For further information please ring Tony Williams on 01-366 6565 Ext. 2447.

Application forms are available from the Borough Treasurer, PO Box 54, Civic Centre, Silver Street, Enfield EN1 3XF (366-6565 Ext. 2502). Closing date 4th April, 1980. Please quote reference ORA/683.

London Borough of **Enfield**

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They should have GCE 'O' level mathematics or science or ONC with some computer experience.

The appointment will be temporary for a period of approximately 4 years but there may be an opportunity for extended employment.

Application form from County Engineer (please quote Post No. 43), Highway House, 21 Chessington Road, West Ewell, Epsom, Surrey. Tel. 01-394 1788 Ext 215. Closing date 9 April, 1980.

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A major force in the systems and software field, this British Software House has considerable interests in the German market. They have several offices established in Germany and are seeking to recruit additional personnel for these offices. The main requirement is for Programmers, Analyst/Programmers and Analysts with experience of ICL System 10, Series 1500, 1900 and 2900 (especially minis) or DEC PDP's. A working knowledge of German would be a considerable advantage, as client liaison will be involved. Mobility is important as you will be travelling to Clients offices throughout Germany. These are permanent positions, with excellent career opportunities for those wishing to move to Germany on a long term basis. Relocation assistance will be given, other company benefits considerable.

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Specialist Computer Recruitment Ltd

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Or write to Computer Department, Montague L. Meyer Ltd., Mercantile House, All Saints Street, London N1 9RW.

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For a detailed description of the posts, and of SWURCC, contact the Personnel Officer, University of Bath, BATH BA2 7AY (0225 61244, extension 700), quoting reference B0/3R. Closing date April 9th.

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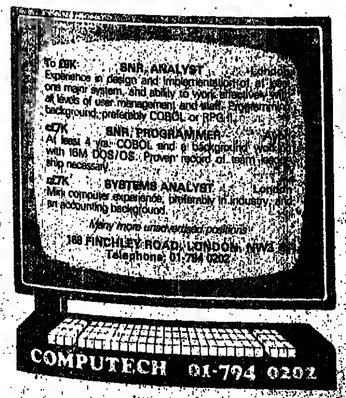

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London Borough of **BRENT**

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You will have potential to move into management. You would lead the technological side of a project with up to six people reporting to you. You should have a good business background and it would be an advantage if you have had life assurance experience and a business degree.

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(219)

Cambridge City Council

SYSTEMS ANALYST

(Re-Advertisement)

(Salary up to £6,090, with Comparability Award pending)

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City Treasurer, Guildhall, Cambridge CB2 3QJ. (139)

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For more information about this job contact JACK COLLINGS during office hours (9-5) on 0273 833848 or at home any evening on 0273 400880. Interviews can always be arranged locally or in London.

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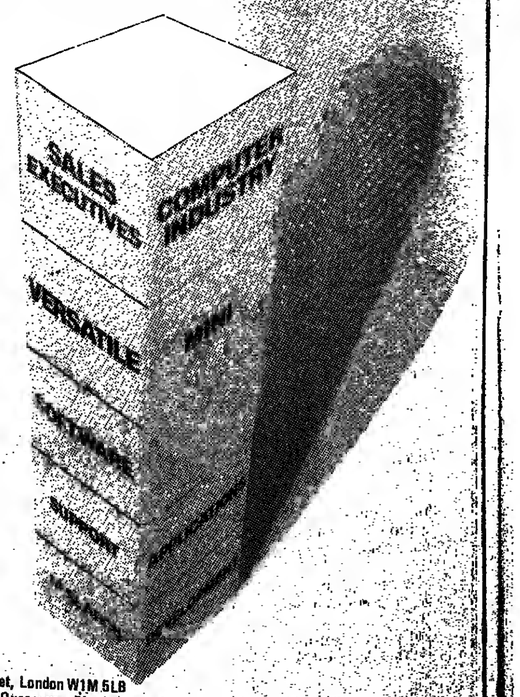

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£7,000-£9,000

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REF: NW1/2003

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REF: E1/2003

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Please write or telephone: W. Muff, Personnel Officer, Ferranti Instrumentation Limited, Moston, Manchester M10 0BE. Tel: 061 681 2071.

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OPERATIONS / PRODUCTION MANAGER

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MICROELECTRONICS APPLICATIONS RESEARCH INSTITUTE

SENIOR RESEARCH ASSOCIATE

The University, in collaboration with Newcastle upon Tyne Polytechnic and Computer Analysts & Programmers Limited, has set up a major new Institute to undertake applied research and development projects for industrial and government clients relating to advanced applications of programmable microelectronics. Applications are invited for a Senior Research Associateship sponsored by the Science Research Council. Candidates should have a Ph.D. or equivalent research experience in the hardware and/or software aspects of modern digital system design, and a keen interest in developing new applications of programmable microelectronics. The work will involve interactions with relevant research activities throughout the University and with industry, with the aim of identifying promising such applications and investigating their feasibility.

The appointment will be for three years commencing 1st May, 1980, or such later date as may be arranged, with a salary in the Range II scale £6,083-£10,484 per annum, according to age, qualifications and experience. Membership of the appropriate University superannuation scheme will be required.

Applicants should send a detailed curriculum vitae, and the names and addresses of three referees, to Professor B. Randell, Computing Laboratory, The University, Newcastle upon Tyne, NE1 7RU, from whom further details can be obtained. The closing date for receipt of applications is 11th April, 1980. Please quote reference CW.

(160)

UNIVERSITY OF YORK
Department of Computer Science

COMPUTER SOFTWARE TECHNICIAN

Applications are invited for the above post from applicants with some experience of computer programming and an appropriate qualification. The post will involve assisting staff and students in teaching and research activities and includes programming and writing documentation for PDP-11, DEC system-10 and microcomputer systems.

Salary on Grade 3, from 1st April, 1980. £3,594-£4,092.

Applications in writing, giving the names and addresses of two referees, should be sent to the Deputy Bursar, University of York, Heslington, York YO1 5DD by Friday, 28th March, 1980.

(159)

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E. Gomme Limited, manufacturers of G. Plan furniture at three locations in the United Kingdom, require a Systems Analyst to join the small friendly data processing team at the High Wycombe headquarters, where we use an IBM 370/125 to process a wide range of applications.

Applicants should ideally be aged between 25 and 35, with a programming background and two years' systems experience. We can offer you an important role in the design, implementation and maintenance of a wide variety of both batch and T.P. applications.

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Company Personnel Manager
E. GOMME LIMITED
Spring Gardens, High Wycombe, Bucks.

(210)

LONDON

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The successful applicants can look forward to a rewarding future with planned career progression.

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For further details and an application form contact Barrie Chaney at Effectia Gravis.

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(242)

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The base of work will be in our London office but the successful applicant will advise and assist work in our other U.K. offices and there may be opportunities for short periods of work abroad.

The position is permanent and pensionable and there are considerable opportunities for advancement. Written applications, giving personal and career details to:

Jamieson Mackay and Partners
3 Mandeville Place
Wigmore Street
London W1M 5LB

LONDON BOROUGH OF MERTON
MERTON TECHNICAL COLLEGE

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Applicants should be graduates or possess equivalent qualifications. Preference will be given to candidates with recent practical experience in the business/commercial data-processing field. An ability to teach elementary Book-keeping/Accounts would be an advantage.

Salary: Burnham Scale, Lecturer Grade II: £4806 to £7686 p.a. plus £609 p.a. London Allowance.

Application form and further particulars are available from the Chief Administrative Officer, Merton Technical College, Morden Park, London Road, Morden, Surrey, to whom applications should be returned within two weeks.

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Despite the varying levels of experience, this will be a high level team. We are therefore looking for graduates (or equivalent) who have a good knowledge of computer software capabilities. This must be supported by knowledge of one of: Accounting, Engineering, Business Administration, Production Control, Manufacturing or Marketing.

You will use the latest and most sophisticated equipment in the Digital range. As a member of this fast-growing group you will be able to make a positive contribution to our success. Promotion prospects are exceptionally good for those with ability.

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Systems Analyst

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Rossing Uranium Limited, a member of the RTZ Group, has a vacancy for a Systems Analyst to join their progressive Data Processing Unit in Swakopmund, S.W. Africa - Namibia. Applicants should have at least four years' experience and a proven record of implementing high standard systems on schedule.

The successful applicant will have the opportunity of working with a wide range of interesting on-line and batch systems in a stimulating environment using twin ICL machines with MINIMAC and TPS. IDMS is planned during the course of this year.

In addition to an excellent starting salary the company also offers housing at a nominal rental, subsidised water and electricity, annual holiday bonus, generous leave and excellent pension and medical aid schemes. A married man with two children will pay approx. R3,300 income tax on above mentioned salary in S.W. Africa - Namibia. Swakopmund is an attractive seaside resort with a mild and pleasant climate and good educational, medical, social and sports facilities.

The appointment is permanent and not on a contract or expatriate basis. (182)

Rössing Uranium A member of the R T Z Group

Please write or telephone for an application form to: T. R. Ball, Head of Group Personnel Services, Rio Tinto-Zinc Corporation Limited, 6 St James's Square, London SW1Y 4LD. Tel: 01-930 2399.

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Our continued expansion has generated a need to increase our systems strength at our Aldridge Office. We are looking for analysts male or female with a minimum of 3 years' solid experience, preferably (but not essentially) with some experience with mini computers. We are particularly seeking two high calibre analysts to play an important role in extending our existing range of interactive packages. The people we are looking for must be confident, clear thinking and able to express themselves at all levels up to and including Main Board level.

If you feel you have the ability to contribute towards our future growth then please write giving full details of age, experience and current salary to: E. Williams, Director, Donaghue Information Systems Limited, Shenstone Drive, Aldridge, West Midlands WS9 8TP. (227)

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(139)

UNIVERSITY OF ABERDEEN COMPUTING CENTRE

The University Computer Service is based on a Honeywell 66/80 Dual-Processor mainframe housed in the Computer Operations Centre at West Seaton.

The system provides for a mixed batch and timesharing workload, and currently supports over 150 remote terminals, as well as providing the major source of computing power to a regional network serving four other Scottish Universities.

Applications are invited for the following posts:

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Applicants should have at least four years' operating experience on a large mainframe supporting a terminal network, including preferably at least one year's experience as a Senior Operator.

Salary on scale: £4188 to £6154 per annum, with appropriate placing.

SENIOR OPERATOR

Applicants should have at least three years' experience, preferably on a large mainframe supporting a terminal network.

Salary on scale: £3387 to £4152 per annum with appropriate placing.

Both appointments will involve compulsory shift working, in respect of which a supplement of up to 20% of salary is payable.

Application forms are obtainable from the Secretary, University Office, Regent Walk, Aberdeen AB9 1FX to whom they should be returned by 3 April, 1980. (288)

UNIVERSITY OF NEWCASTLE UPON TYNE COMPUTING LABORATORY

LECTURER IN COMPUTING SCIENCE

Applications are invited for a Lectureship in the Laboratory from candidates with research achievement and high academic qualifications and interested in teaching to the various undergraduate and postgraduate courses with which the Computing Laboratory is associated. In particular in digital systems design and microprocessor applications. Preference will be given to experienced candidates whose main interest lies in the fields of:

1. Microprocessor Hardware and Software
2. Computer Architecture.
3. Real-time and Distributed Systems.
4. Data communications and Networking
5. Language Design and Implementation.

Salary will be at an appropriate point on the Lecturer/ scale operative from 1st April, 1980, £5,082-£10,484 per annum, according to age, qualifications and experience. Membership of the appropriate University Superannuation Scheme will be required.

Further particulars may be obtained from the Senior Assistant Registrar (F.P.), The University, 6 Kensington Terrace, Newcastle upon Tyne NE1 7RU, with whom applications (three copies), together with the names and addresses of three referees, should be lodged not later than 11th April, 1980. Please quote reference CW. (161)

Re-advertisement UNIVERSITY OF EXETER

The University wishes to set up a Microprocessor Unit within the Computer Unit to provide support for the use of microprocessor systems by University departments, local industry and other outside organisations. It is seeking an

EXPERIENCED ELECTRONICS ENGINEER

to lead this new development in its computing services.

The person appointed will be responsible to the Director of the Computer Unit but will work in collaboration with staff from several academic departments and make use of laboratory facilities in the Faculties of Science and Applied Science. He (or she) will be responsible for providing consultancy on hardware questions, for setting up courses on the principles and practical use of microprocessor systems, for defining personal standards of microprocessors within the University and for ensuring that adequate programming, testing and diagnostic facilities are provided to support the standards.

Applicants should hold a degree in engineering or electronics or have equivalent qualifications and preferably have several years' experience in the design and implementation of complex electronic systems. Evidence of organisational ability and ability to advise and instruct inexperienced or naive users in the use of computer systems is also required. Knowledge and experience of software systems for small computers and of data communications techniques is also essential.

The appointment will be for five years in the first instance and will be on the scale £6427-£10484 or £6427-£12584 p.a. (depending on qualifications and experience).

Further particulars from Miss Doreen Watson, Northcote House, Queen's Drive, Exeter, EX4 4QJ, to whom applications (6 copies) should be sent by 14 April 1980. Please quote reference No. 3216. (170)

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This large IBM installation utilises on-line/ data-base processing and is seeking additional Analyst/Programmers to cover major developments. You should have over 12 months experience of PL/1 or IBM COBOL, and some analysis or program design knowledge.

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Our client urgently requires a senior person who can demonstrate a wide knowledge of mini's in both the analysis and programming functions. A degree or equivalent qualification is required together with a professional approach to data processing.

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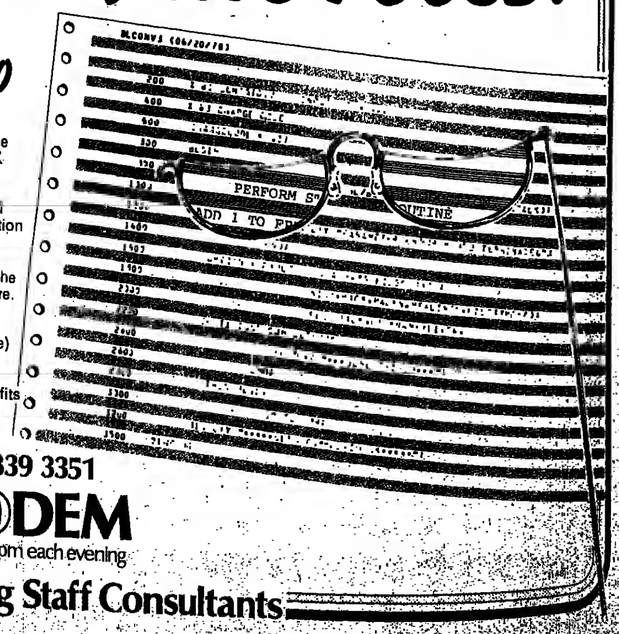

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SYSTEMS ENGINEERING

Ref: 1180

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Definition of Customer requirements, preparation of proposals, System Generation, Installation and Debugging, Customer Software Support and Operator Training.

Ref: 1280

SOFTWARE APPLICATIONS ENGINEERS

To £9,600 plus car

The preferable requirements for this position are an education to degree or similar high standard together with five years' previous experience in programming and also experience in a sales environment. An essential qualification would be Cobol experience.

Responsibilities will include:
System definitions, formulation of proposals, liaison with Customer programmers, special applications, definition and supervision and Field Service liaison.

Ref: 1380

APPLICATIONS ENGINEERS

To £9,000 plus car

This post preferably requires a person with experience of large Data Communication Networks, defining systems both at user and in a sales environment, large proposal preparation and presentation to customers.

Responsibilities will include:
System definitions, formulation of proposals, sales training, customer presentations and large system checkouts.

SALESPERSONS

Ref: 1580

MICROSYSTEMS SALESPERSONS

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Ref: 1880

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Ref: 1780

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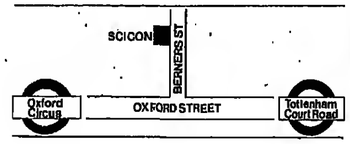
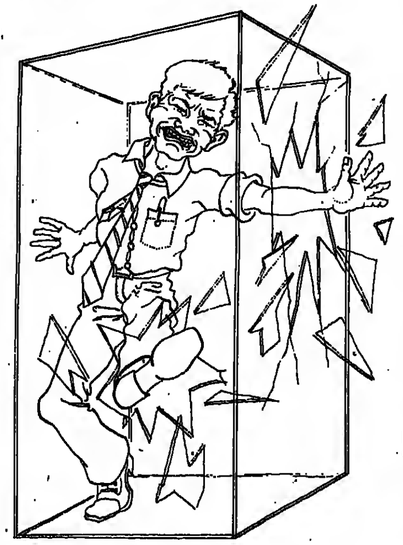
If you are an Engineer whose heart is in Engineering, buy who feels stifled by bureaucracy, limited equipment, little variety and stimulation at work, do come along and:

SEE:
- the computer power including: DEC VAX 11/780, DEC PDP11; HP 1000; HP 3000; WANG; IBM Series 1; ZILOG Z80; INTEL 8080/8085; Data General Micro Nova; Texas 990.
- the well equipped engineering laboratory.
- the variety of projects including micro based missile systems, the production and design of specialised data communications equipment, and the development of special purpose peripherals.

CHAT:
- to a fellow professional who will tell you about Scicon, one of Britain's largest systems and consultancy companies, and subsidiary of BP. About our rapidly growing Engineering team; about the personal challenges and rewards of being part of it. And he will listen to your own career expectations.



BREAK THROUGH



ON MARCH 25th...

CONSIDER:
- our current openings for Engineers at all levels. Depending on your interests and experience, you could be made an immediate offer as a:

Senior Process Control Engineer – graduate currently with an automation supplier or user. To £10K

Systems Programmer – with in-depth experience of mini or microcomputer operating systems and engineering software. To £9K

Defence Design Engineer – graduate with at least one year's experience in Defence. To £8K

Electronics Design Engineer – graduate with at least one year's experience in industry. To £8K

Support Engineer – with a Service or maintenance background probably in field support for a mini computer or process control supplier. To £7K

Assistant Engineer – possibly on day release towards electronics qualifications. To £5K

DO:
- Ring us anytime or come along on March 25th between 4.30pm and 8.30pm.

Alternatively, please write to Roger Morton, Engineering Division, Scicon Consultancy International Limited, Sanderson House, 49 Berners Street, London W1P 4AQ. Telephone 01-580 5599.

It will be worthwhile.

bringing computers to life

Scicon consultancy international

---

contracts for programmers and analysts

Computer People London
VLI group

Contract assignments in the Northern Home Counties and London (all postal districts)

- ★ *IMS Programmers with COBOL or PL1*
- ★ *CICS Programmers and System Programmers*
- ★ *OS/DOS COBOL Programmers*
- ★ *System 34 RPGII Programmers and Analysts*
- ★ *System Analysts — production control, management information commodity broking and TPS/IDMS applications*
- ★ *ARBAT AIMS Programmers*
- ★ *H62 and H64 GCOS COBOL Programmers*
- ★ *CORAL Programmers with System X experience*
- ★ *1900 GS CORAL Programmers*
- ★ *Intel 80/85 telephone message switching consultant*
- ★ *G3 Software Programmers*

Computer People South
VLI group

Contract assignments in the Southern Home Counties and the South West of England

- ★ *Ventek Datapoint anelyst Programmers*
- ★ *IMS Programmers with COBOL or PL1*
- ★ *IMS Database Designers*
- ★ *CICS COBOL Programmers*
- ★ *370 MVS System Programmers*
- ★ *PL1 Programmers*
- ★ *MARK IV Programmers*
- ★ *PDPII RTL2 and DIBOL Programmers*
- ★ *370 OS/DOS COBOL Programmers*
- ★ *2900 MTS PLAN System Programmers*
- ★ *DG Business Basic Programmer*
- ★ *Analysts with Lloyds insurance and strong financial experience*

If you'd like to join us on contract, we'd be very pleased to hear from you, send off the coupon or phone us NOW for information on our current assignments PLUS our PEOPLE PACKAGE which provides the security of sick pay, weekly pay and other benefits.

Ring John Kelly or Barbara Wolski on 01-836 8411 or mail the coupon

Please provide information about contract assignments.
London ☐ South ☐
Name _____ Tel.Nos.
Address _____ (Day) _____
_____ (Ev/Wkd.) _____
Mail (no stamp) to FREEPOST, VLI House, London WC2N 1BR

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
9.30 a.m.-9 p.m. THURS.-WEDS.
(Mar. 20, 21, 24, 25, 26)

COMPUTER ENGINEERS

Are you looking for a technically demanding and responsible role with a company offering excellent prospects? Yes! Then this position is going to interest you.

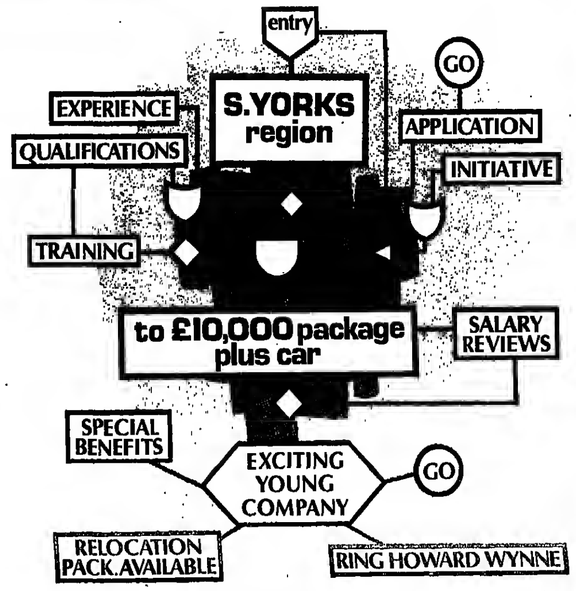
Our client needs a computer engineer to be responsible for a range of complex and sophisticated minicomputer systems.

The level of the job requires a minimum of two years' experience maintaining computer systems (though full product training will be given), the ability to work independently, and good customer liaison skills.

You will join the already profitable new division of a company well known in the industry, and their progressive expansion offers bright prospects for your career development.

Benefits include a Basic Salary of up to £8,000 pa, a company car, paid overtime, generous relocation allowances where required, and many other big-company benefits.

For further details contact Howard Wynne, Senior Consultant, Computer Engineering Division, on 01-637 9611.



FIELD SERVICE

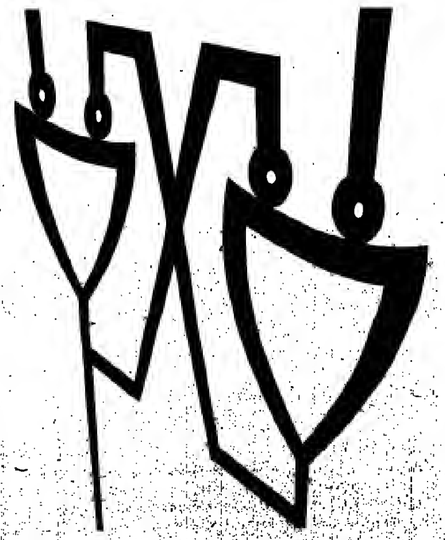
COMPUTER ENGINEERS

LONDON — North, South, West, Central & City
Basic Salary to £6,500 — Gross to £8,000 + Car.

Both junior and experienced computer engineers are needed to join the London team of a well-known computer company.

A minimum of one year's maintenance of peripherals or systems is necessary, and in return they offer a full product training, interesting systems to support, an attractive income and a progressive career.

Take up this opportunity by telephoning Peter Gorton, Manager Computer Engineering Division, on 01-637 9611.



Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION (162)

A REAL OPPORTUNITY FOR LOGIC DESIGN ENGINEERS

MESSAGE SWITCHING **CITY BASED**

This company is an indapendent part of one of the world's leeding communications groups. A new davelopment group has racently baen formad to develop a comprahensive message-switching system ollering a total solution — Hardwara, Soltwara and support — to communications problems. The eyatam is besad on the T.I. 990/10.

SENIOR DEVELOPMENT ENGINEER

TO £9,250

To work on the dasign of interfaces and controllers for usa with mini and micro computer based systems. The applicants for this post should be graduate engineers with saveral yaars' experiance of TTL logic design and familiarity with some of the following:

- ★ DATACOMMUNICATIONS
- ★ ASSEMBLY LEVEL PROGRAMMING
- ★ MICROPROCESSORS

This position will intaraal somaona with the ability to work with minimum supervision.

DEVELOPMENT ENGINEER

TO £7,250

Tho davolopment engineer will be qualified to a minimum H.N.C. level with sound exporianca in logic design and transistor circuit design. A knowledge of Line Conditioning on Telax or Telegraph networks would be usaful.

Both of these positions will be directly responsible to the Hardwara Development Manager, and will raquire self-motivation, creative abilily and a high degraa of technical competence. Career prospects will be attractive, to thosa praparad to identify with the company's davelopment objectivas.

CONTACT: TONY EDWARDS ON 01-603 7335 (248)

IPP — Information Processing People
58 Pembroke Road London W8 Telex 261296 Computer Services & Recruitment Consultants 01-603 7335

JOHN BROWN MACHINE TOOLS

DIVISIONAL SYSTEMS

At the Banner Lane (Coventry) headquarters of the Division, following a detailed study, we have a number of vacancies in our Business Systems development function.

The vacancies are for:

Project Leaders
Analysts & Programmers
(for on line and data base systems)
Codasyl Database Administrator
Univac 1100 Systems Programmer
Network Controller

The development schedule for the next 18 months includes:
On line production and inventory control
Shop floor data collection
Project planning, resource analysis and cash flow control
On line integrated accounting
Financial modelling and market statistics

We are based on the outskirts of Coventry within easy reach of the Warwickshire countryside and offer a pleasant working environment with excellent conditions of employment.

If you wish to discuss further details please telephone Peter Hodgkins on Coventry (0203) 465231 extension 288.

Otherwise please write for your information package, indicating the positions of interest to:
E. J. Burns, John Brown Machine Tool Division
Banner Lane, Coventry CV4 9GE
We are an equal opportunities employer.

John Brown Machine Tool Division (252)

CLASSIFIED COPY

All classified copy should reach our offices no later than 3.30 p.m. on the Monday preceding Thursday's publication.
If complete artwork is supplied 11 a.m. on a Tuesday.
Ring Ray Kelly for further details on 01-261 8016.

JBA

Micro – Software Sales

London Based **Earnings c. £18,000 + (+ CAR etc.)**

Our client is beginning to acquire an outstanding reputation throughout the commercial d.p. world for the innovativeness and flair of its software products. Their aim has been to make the micro easy and flexible to use in an interactive commercial environment – and there is no doubt that they have succeeded. Opportunities exist in the company's Sales and Marketing team for professional, successful sales personnel who can sell worldwide. At present, the vast majority of their sales are made to the USA and Europe and the directors wish to see this trend continue – experience of working in non-UK markets is therefore particularly welcome.
Contact: Andy Wright

Data Communications Systems

London **£8,500 to £11,000**

Our client has requirements in two specific areas for Communications Consultants at various levels.
First – the company's activities in developments towards the Electronic Office require expertise gained in message switching, packet switching or word processor systems.
Second – pure Communications experience is required, which will include extensive knowledge of P.O. DATEL services, P.O. procedures and practises, switching systems and data transmission facilities.
If you can contribute in either of these two areas, and would like the opportunity to join one of the most highly respected systems houses in the U.K., phone today.
Contact: Margaret Stevens

Software Programmers

Berkshire **£8,000 – £11,000**

A real chance to join a small dedicated group of mini-computer software development technicians in a computer manufacturing company. The team are involved in the design of data management software, compilers, and related packages, for an increasing range of business orientated machines that are recognised as being among the leading products in this sector of the market. Applicants must have at least four years experience of similar work using advanced techniques. A degree or post-graduate work on system software or compiler architecture would be an advantage.
The company offers an attractive employment package, pleasant working environment and the opportunity to assume responsibility for projects within the group concept.
Contact: Mike Creamer

Systems Consultant

Thames Valley **up to £9,000**

A new micro-systems house wishes to employ a Senior Systems Consultant to undertake the initial investigation/feasibility studies for prospective micro users. Candidates must have five years of sound commercial experience particularly in accounting and financial applications. An opportunity to be in on the ground floor and help develop the company.
Contact: Jim Baker

Production Control Systems

Rugby **c. £7,500**

A medium sized engineering company is seeking a SENIOR SYSTEMS ANALYST to work on the development and implementation of production control systems within their UK Group.
Applicants should have a minimum of 3 years commercial analysis and design experience with a bias towards production or manufacturing systems.
Experience of an IBM 370 environment would be an advantage.
Excellent opportunities in a new installation.
Contact: Bev Stevens

INSURANCE COMPANY
Systems Analysts

South of England

Salaries up to £7,100 + mortgage subsidy + non-contributory pension + free permanent health scheme + low interest loans + subsidised canteen and sports/social club + all relocation expenses + other benefits.
A very attractive prospect for career-minded Analysts, keen to progress in a growth-orientated modern company putting in database and TP systems, promising exciting design and development work well into the 1980's.
We are keen to hear from Analysts who have a sound business background, a good knowledge of COBOL and experience of system design over two to three years, ideally in an accounting, financial or banking environment.
Contact: Mike Creamer

COBOL Programmers

Andover, Hants. **up to £6,700 (review pending)**

PLUS: Mortgage subsidy, non-contributory pension, free permanent health insurance, low interest loans, free banking, discount on insurance services, subsidised sports and social club, subsidised canteen, etc.
PLUS: Generous relocation and settling-in allowances.
We are looking for 18 months to 2 years concentrated programming experience, gained in a real-time, database environment, in COBOL. Personality and attitude to work are important. Burroughs and/or DMS knowledge very attractive.
Contact: Mike Creamer

JAMES BAKER ASSOCIATES,
International Personnel Consultants,
32 Savile Row, London W1.
Tel: 01-439 9311.

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
9.30 a.m.-9 p.m. THURS.-WEDS.
(Mar. 20, 21, 24, 25, 26)

SPECIAL SYSTEMS MANAGER c£12K

This is a key position reporting to the European Director of Post Sales Support Services. Responsibilities include the management of a team of HARDWARE and SOFTWARE personnel involved in the design and implementation of special systems.

In addition to project management, this role entails close liaison with the Marketing Division, Systems Houses and customers, to ensure implementation within agreed time frames.

Ideally, the applicant will be experianced in both HARDWARE and SOFTWARE and will have sound business acumen, well able to appreciate costing and financial controls.

Experience of Real-Time/Communication systems would be an advantage.

We are recruiting for the European subsidiary of one of the World's leading minicomputer manufacturers specialising in the industrial, scientific, and communications market.

Continuing expansion of the manufacturing capability and the development support teams has created vacancies for senior support staff in most disciplines and particularly within the Customer Services Division.

Company benefits are excellent, and besides the quoted salaries include free BUPA and NON-CONTRIBUTORY PENSION. RELOCATION would also be possible.

THE CENTRE OF SOMETHING SPECIAL

TECHNICAL SUPPORT c£9K

PRODUCT SUPPORT SPECIALIST
PRODUCT SUPPORT ANALYST

Both roles require specialists, either HARDWARE or SOFTWARE, who will be involved in the introduction of support of company products, and other manufacturers' products, into our European Customer Base.

In either case, responsibilities will include the implementation of maintenance philosophies, the recommendation of training and logistics requirements, and the initial installation of assigned products.

In addition the Technical Support Team provides the highest level of support to engineers in the field throughout Europe.

Some travel may be required to Europe and the U.S.

SPECIAL SYSTEMS ANALYSTS c£9K

These posts involve the design and implementation of non-standard software products and modifications/extensions to existing products. Special Systems Analysts will work in a dynamic environment, and be responsive to new requirements, well able to project a professional image to customers.

Ideally, applicants will have experience in either real-time operating systems, communications software, or mainframe frontending/emulation.

There may be opportunities for travel within Europe.

THESE POSTS ARE BASED AT HEAD OFFICE IN THE THAMES VALLEY

Apply in the first instance to Derek Pearson on 01-637 9611

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611 MANAGEMENT & EXECUTIVE SELECTION (163)

EDP STAFF FOR EUROPE

We are a multi-national company who manufacture and sell health care products throughout the world.
We have subsidiaries in all major European countries and we are looking for a number of development personnel to expand our decentralised European MIS/EDP departments.

GRENOBLE (France) — Procedures and Training Manager up to £14,000

The European Headquarters of the Company situated on the edge of the French Alps is looking for an experienced EDP professional to be responsible for the technical and functional auditing of the subsidiary EDP functions and to co-ordinate EDP training throughout the European Division.

Applicants must have at least 8 years' MIS/EDP experience including programming analysis and organisation.

Knowledge of at least one other European language (preferably French) would be appreciated.

GRENOBLE (France) — Analyst-Programmer c. £7,000

The European Headquarters of the Company is also looking for an Analyst-Programmer to be responsible for the development of diverse projects concerning the processing of data from all subsidiaries.

We are looking for people with 2-3 years' experience on IBM S32/S34 equipment and who have a thorough knowledge of COBOL and RPG. Although not essential to the function a knowledge of written and spoken French would obviously help the applicant to settle into his/her new situation.

DUBLIN (Ireland) — Systems Analyst

The Irish subsidiary is the largest manufacturing location for the company within Europe, consisting of two factories in the Dublin area. We are looking for someone to design and develop manufacturing systems for an IBM 4300 series computer.

The applicants should have 3 to 5 years' experience in a manufacturing environment preferably working with IBM equipment. Knowledge of COBOL is essential and experience of TOTAL would be a significant advantage.

MADRID (Spain) — Analyst-Programmer c. £8,000

To develop commercial and production systems on IBM S34 and to assist the MIS/EDP supervisor in all his functions. The Spanish subsidiary was created in early 1979 and important growth is foreseen. We are looking for an Analyst-Programmer with 2-3 years' experience on relevant equipment and who has thorough knowledge of RPGII and COBOL.

In view of the location and the functions to be assumed the applicant should be fluent in Spanish or capable of becoming fluent within a short period.

WEMBLEY (England) — Analyst-Programmer circa £6,000

Working for the UK Subsidiary his/her initial task will be to participate in the joint European development of an interactive order/invoicing and stock control system to be run on IBM S34.

Applicants should have 2-3 years' programming experience with at least 1 year as an analyst-programmer working on IBM 32/34. Knowledge of COBOL and RPG is essential.

HEIDELBERG (Germany) — Analyst-Programmer £11,000

Working for the German subsidiary which covers both Germany and Switzerland his/her initial task will be to participate in the joint European development of an interactive order/invoicing an stock control system to be run on IBM S34.

Applicants should have 2-3 years' programming experience with at least 1 year as an analyst-programmer working on IBM 32/34.

Knowledge of COBOL and RPG is essential. Good knowledge of German is required.

Initial interviews will be held in London, applicants should write enclosing their C.V. to:
DIRECTOR OF HUMAN RESOURCES, C/O BECTON DICKINSON, B.P. 798, 38035 GRENOBLE CEDEX, France
(14)

COMPUTER OPERATOR

Up to £4,000 Plus 25% shift premium Medway, Kent.

The Person
Should have 1 year to 18 months IBM operating experience under OS (preferably OS VS1). They should be aged 18-23 with a good standard of written and spoken English and have minimum 'O' level or Grade 1 CSE in English and Maths. 'A' level Sciences would be advantageous.

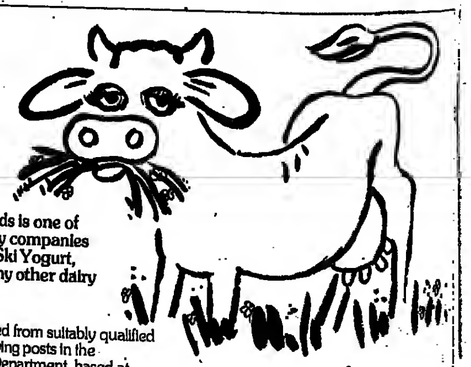
The Environment
Lloyds is the major international insurance market with a dynamic D.P. centre. We run an IBM syetem 3031 and an IBM 148 operating DOS and OS under VM370 and in addition 2 DEC PDP 11/70's.

Conditions
We operate a 12 hour shift system and in addition we offer annual 4% bonus, 9p lunches, non-contributory pension, 4 weaks holiday and much more.

For further information
Please telephone Bill Forder, Operations Manager on Medway 407333 ext. 3520, or write to Reg Hannam, Corporation of Lloyd's, Gun Whsrf, Dock Road, Chatham ME4 4TU for an application form.

(703)

LLOYD'S OF LONDON



Express Dairy Foods is one of Europe's largest dairy companies and the producer of Ski Yogurt, hard cheese and many other dairy products.

Applications are invited from suitably qualified candidates for the following posts in the Management Services Department, based at South Ruislip, where they will be involved in major projects covering:

- the installation of a large mainframe sales accounting system.
- over 35 data general Nova mini computers are being installed into depots, factories, tele sales and various user departments throughout the company.
- Micro computers are being designed and installed for factory processors and commercial applications.

The following applicants will be involved in all three of these major applications as well as traditional O and M type activities.

Project Manager - Operations
(£9,500 + car)

We are looking for someone with management and computing experience who is capable of taking responsibility, solving problems and leading a team of skilled professionals. You should have about 7 years experience in the computer operations environment including computer communications. To be a competent programmer and have a knowledge of Business Basic is also essential.

Why this in-depth experience? Because you will be responsible for the implementation of the hardware, the day-to-day support of our minis in the [illegible] of your own team of programmers.

Project Manager - Systems
(£8,500 + car allowance)

A relevant degree or HND plus at least 3 years' programming and analysis experience on mainframe and mini computer and the ability to communicate with non-computer personnel is required.

You will be responsible for working with factory management to specify projects and to work with software houses on their programs. It will be your responsibility to ensure that projects proceed to plan and on time.

Management Services Officer
(£7,000 + car allowance)

You'll need similar qualifications and at least 2 years' [illegible] to those mentioned above and you'll be part of a team [illegible] major projects; specifying program formats, systems testing and implementation. You'll need to be capable of taking the [illegible] and to work with minimum supervision.

All positions are open to men or women and would suit [illegible] capable people who can handle responsibility, solve problems and want to develop their skills on systems and machines.

The working conditions are excellent and, because the [illegible] basically network development involving the east coast, you will be expected to visit sites around the country.

Apart from the salaries quoted there are good [illegible] and excellent future prospects.

Please write enclosing a full CV to:
Peter Slimmon,
Personnel Admin. Manager,
Express Dairy Foods Limited,
Block 'B', Victoria Road, South Ruislip,
Middx. HA4 0HR. Tel: 01-849 3344

EXPRESS

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
9.30 a.m.-9 p.m. THURS.-WEDS.
(Mar. 20, 21, 24, 25, 26)

SECURITY MONEY CAREER

Expansion into the Eighties with a new range of microprocessor based financial systems has created marvellous opportunities for either experienced sales people or those wishing to enter the sales field, to join the Financial Systems Sales Division of our client, a major conglomerate, based North of London.

To be a successful candidate you should possess both the drive and acumen to negotiate to Senior Director level, as our clients customers are the major names in the financial sector and as such demand the best.

In return you will receive a good earnings package (negotiable on experience) + a company car. Promotional prospects for the right candidate are excellent.

For an immediate interview contact Tony McGrath, on 01-637 9611

Do you take training seriously? Our client does.....

- ☆ As the major force in mini-computer based word processing in the U.K. today, they have established an initial training structure, covering product knowledge and sales training, and are committed to still further expansion.
- ☆ Vital to this expansion is a person to undertake the formalisation of customer support training. This will involve direct liaison with the Regional Support Supervisors to create and implement a wide variety of in-house courses for both our clients, staff, and their customers.
- ☆ Experience in training sales support specialists and customer staff in a capital equipment environment is essential (if it's in word processing so much the better).
- ☆ Remuneration will be a basic salary of £7K + car + bonus, 4 weeks holiday, BUPA, Life Assurance, etc.
- ☆ *Enthusiasm and professionalism are key words within this company, if you have something positive to offer contact Tony McGrath*

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

S. Germany £22-25,000 p.a.

CICS Systems Programmer

Senior Systems Programmer to take responsibility for all aspects of CICS tuning, support and future planning. The installation is in the centre of an attractive city, and runs 2 cpu's under DOS/VS and DOS/VSE. Applicants should have a thorough knowledge of CICS/VS, and some DL/1 and VM experience would be helpful. Although one of your colleagues is English, you will be expected to achieve reasonable fluency in German after 3–4 months.

MVS, JES2, TSO Support

Senior Systems Programmer to work in an extremely pleasant installation as part of a small English-speaking systems support team. Responsibilities will cover all aspects of support for MVS, TSO/TCAM and the network of local and remote terminals. Ideally, applicants should already possess some MVS experience, but with good TSO knowledge a sound VS1 or SVS background will suffice.

IMS Specialist

IMS Specialist to review and report on a medium-sized company's current IMS usage (transaction rates, DB structure, etc.) The successful applicant will probably have a Systems Programming background, with good knowledge of IMS and IMS utilities. No knowledge of German is required for this position.

PL/1, CICS Design/Programming

Senior Programmer with good knowledge of PL/1 and CICS/VS to assist this DOS/VS installation with the technical design, development and implementation of their first CICS system. Test CICS will be up by May, and the first phase of on-line Production Control is due to go live in September. The successful applicant will be expected to contribute to setting up CICS development standards, and will need to achieve reasonable fluency in German after 1–2 months.

Each of these assignments is on a renewable contract basis with CDS Ag in Switzerland.

For further details, please telephone or write to Brian Bidston at our UK offices, or call during evenings/weekends on 03448 6385.

CDS The European 370 Specialists (195)

87-73 Park Street, Camberley, Surrey GU15 3PE. Tel. 0276 25845. Telex 858082.

Papua New Guinea

Public Services Commission

Data Processing Professionals

Applications are invited from suitably qualified candidates for the following positions with the National Computer Centre, Bureau of Statistics and various other Government Departments.

Assistant Managers
Level 21

Candidates will be graduates with a minimum of 11 years DP systems experience, at least 5 years of which should have been in consultancy and/or project management. Familiarity with modern data processing managerial techniques and principles is essential.

Project Leaders
Level 19

Candidates will have a minimum of 6 years systems and programming experience including some time as a team leader. Applicants must be able to demonstrate that they have successfully managed either part of a large project or a complete small project.

Senior Systems Analysts
Level 19

Candidates must have a minimum of 8 years experience in computer systems work, of which at least 2 years should have been in programming. Some experience in consulting and advising high level management is also essential.

Chief Technical Officer
Level 19

Candidates must have at least 6 years experience covering both commercial and scientific programming. Detailed knowledge of ICL software, utilities and hardware is also essential, with particular emphasis on GEORGE 2 + operating system and 1903 hardware.

Systems Analysts
Level 17

Candidates who will be user-orientated must have a minimum of 5 years experience in computer systems work, at least 2 years of which should have been in programming. At least 3 years experience in one or more of the following is also essential: commercial systems design; design of statistical, scientific or other governmental data processing systems; project leadership; training; consultancy.

Senior Programmers
Level 15

Candidates must have at least 4 years programming experience using COBOL and a low level language (ASSEMBLER). A knowledge of ICL hardware and software, GEORGE 2 + and other systems would be an advantage as would experience of 2950 hardware and software and the development of on-line systems.

Programmers
Level 12

Candidates must have completed an acceptable formal training course in computer science and have at least 2 years programming experience (preferably in COBOL). A knowledge of more than one high level programming language and/or some systems experience would be an advantage.

Rewards

Payable in Kina. The pound equivalent figures will fluctuate due to movement in exchange rates. The exchange rate at 6th March 1980 was K1.58 to £1 Sterling.

Level	*Salary*
21	K18,510
19	K16,510
17	K14,660
15	K13,435
12	K11,880

Plus

* 3 year contract (renewable in most cases).
* Gratuity of 24% per annum of annual salary. Gratuity is taxed at a flat rate of 2%.
* Virtually free married or single accommodation.
* Air fares to and from PNG at commencement and expiry of contract.
* 6 weeks annual leave with return fares to U.K. during 2nd year of contract (including accompanying dependents).
* Free Primary Schooling, Free Secondary Schooling.
* Generous education subsidies (fees and fares for dependent children attending school overseas).

Please write or telephone, quoting reference VIS/PSC-NCC/11 and position(s) interested in for application forms (to be completed in duplicate) and further details to:

The Recruitment Attaché, The Papua New Guinea High Commission, 14 Waterloo Place, London SW1R 4AR. Telephone: 01-930 0922.

Closing date for applications 12th April 1980

Papua New Guinea (228)

DATA PROCESSING MANAGER

SOUTH COAST

Circa SALARY £11,500

We require a Data Processing Manager to take responsibility for the maintenance and further development of a well-established system at present based on an IBM 370/148. On-line enquiry and data entry facilities have been in operation for a number of years, and the first stage of a major branch terminal network using IBM 3600 equipment will be implemented in June of this year.

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The location is our modern Administrative Centre in Worthing, West Sussex, which offers excellent working conditions and amenities, including swimming, squash and tennis.

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We therefore require able Programmers to assist in this conversion, preferably RPG II trained, though we would be willing to retrain you.

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Please apply in writing to Mr. J. Gould, Personnel Manager

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Sandgate, Folkestone, Kent CT20 3SG
Telephone: Folkestone (0303) 30264 (183)

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Salary Scale:
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Applicants for this post should have an interest in the application and use of computers in education. They should have a good Honours Degree and/or a Professional Qualification. Teaching experience or professional/industrial experience and an interest in teaching would be considered an advantage.

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Further particulars and application forms, which should be returned by 9 April, 1980, may be obtained from Whitespace (0231) 66131 ext 224, or from

The Establishment Officer, Ulster Polytechnic, Shore Road, NEWTOWNABBEY, Co Antrim, BT37 0QB.

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telephone 01-637 9611
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(Mar. 20, 21, 24, 25, 26)

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2+2= Many claim to know the answer, but few companies have the solution to sell.

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You will have all the resources of a compeny that has developed a lerge number of systems for e variety of computar hardware end thet era in the envlable position of being e mejor OEM for most of the major computer manufecturers. Excellant support in a friendly professional environment is also enother high mejor strength.

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ICL 2960 OPERATORS

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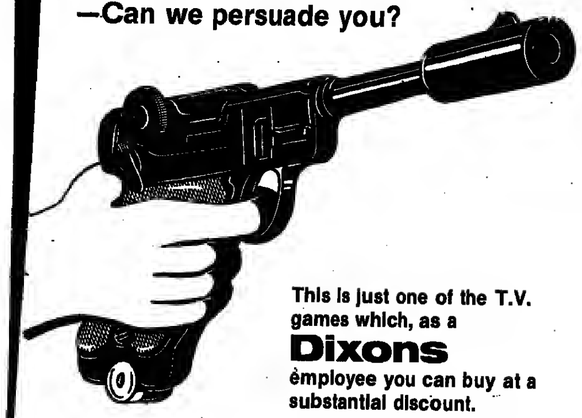

This is just one of the T.V. games which, as a Dixons employee you can buy at a substantial discount.

●Two Shifts ●Growth Company
●Stevenage based
●Salaries to £6000 inc.

Two shift working can dramatically change your lifestyle. For the better.

And when you add to that the advantages of working for a go-ahead company like Dixons, you know that these opportunities are some of the best in the marketplace.

Dixons have a massive complex in Stevenage with modern offices and a new, spacious computer suite. This houses a 2Mb ICL 2960 running under VME/B, a number of mini-computers and a range of communications equipment. Further planned additions to the existing hardware will bring new career opportunities.

We are looking for experienced ICL 2900 series operators, preferably with VME/B experience. Ideally, you will be under 30 with an intelligent approach to operational systems and an ambition to broaden your horizons. The opportunities are there. It's up to you to accept the challenge.

Salaries are good, there is a subsidised restaurant, excellent working conditions and real career development prospects. The staff purchase scheme can help you move into a new leisure bracket and the relocation scheme can help you move into Hertfordshire.

So don't delay. Call Mary Stone right away. She will send you more information about Dixons and fix you an interview.

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Phone: (04427) 73151

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Hardware Support Management c. £11,500 + car

The creation of a Company such as NEXOS is a unique event. The combination of an innovative and sophisticated range of products for the International Electronic Office Systems Market, considerable financial support and the establishment of a committed team of professionals adds up to one thing – success. NEXOS is destined to become a major force in one of the prime market sectors of the 80s.

Our preparations for entry into the International Market are nearing completion; to strengthen our drive we are now looking for someone 27-45 years of age, and preferably fluent in at least one North European language, to liaise with distributors and provide hardware support and training on all aspects of maintenance and fault diagnosis and repair.

Screenbased word processing equipment is one of our primary products, therefore you should preferably have national or international hardware/systems support experience, on either disc based computer or word processing systems.

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Based in Bristol, there will be fairly extensive travel abroad and the prime responsibilities of this position will involve identifying hardware design and manufacturing problems, providing an efficient and comprehensive support service, and ensuring that distributors also provide an appropriate level of customer service.

Earnings will be in the region of £11,500 p.a. together with an excellent benefit package including:

* Health insurance
* Company car
* Pension
* Relocation expenses

Please send written applications giving full details of qualifications and experience in confidence to:-

(1461)

NEXOS

Mr. R. Holmes, Director of European Sales, Nexos House, Whitefriars, Lewins Mead, Bristol BS1 2NX.

This appointment arises from a development plan to re-structure the Company's information systems over the next 2-3 years. New systems development is based on a mainframe IBM 4341 to be installed in 1980, together with distributed processing facilities on mini-computers.

Do you want to be part of our further development? We can offer excellent opportunities for personal advancement as a

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THE POSITION:

Reporting to the Systems Manager, the appointee will play a major role in systems development in the Company and will be involved with users in designing and implementing a range of new systems.

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THE COMPANY:

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THE REWARDS:

A highly attractive salary awaits the successful applicant together with a benefits package including free VHI, non-contributory pension, life assurance and income continuance plans. Generous relocation assistance will be provided where applicable.

THE CONTACT:

If this position interests you, telephone our Systems Manager Bill O'Brien at Dublin 854800 in total confidence, or write to: Arthur Gunning, Group Personnel Manager.

BECTON DICKINSON

Becton Dickinson and Company Ltd., Pottery Road, Dun Laoghaire, Co. Dublin. Tel: 854800

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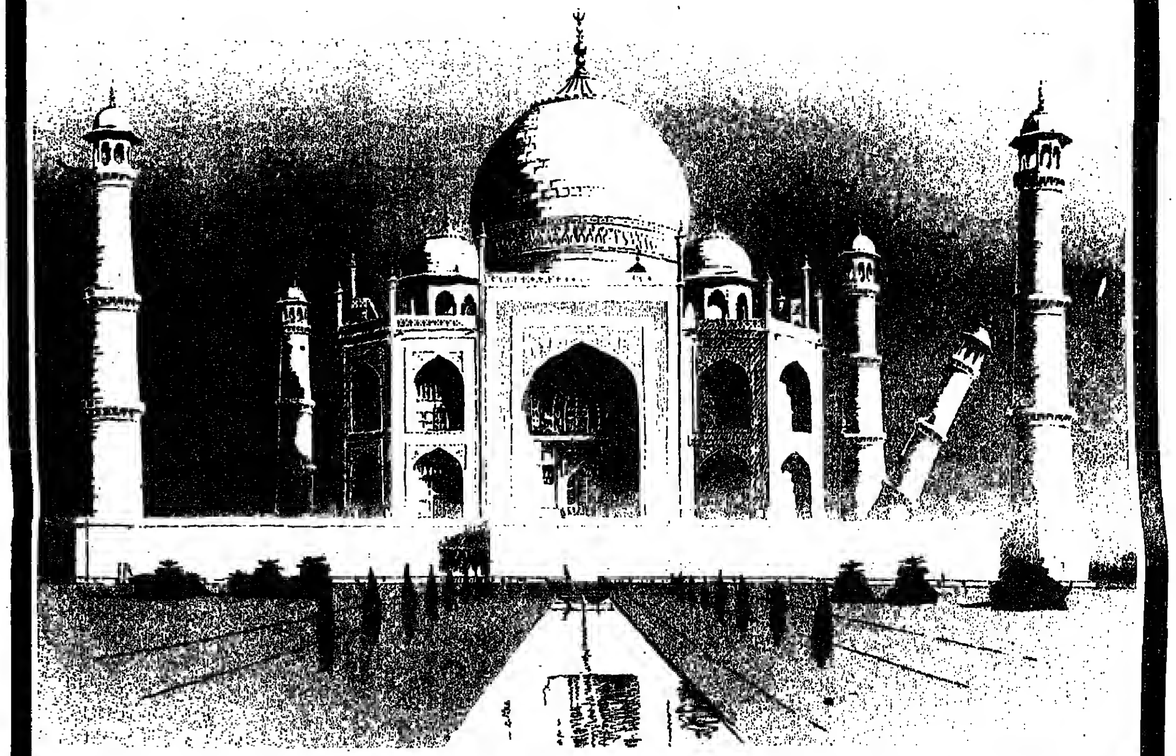

SATISFIED?

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If you are going to get it right, you've got to get it right from the start. This is where our client company scores heavily in future planning.

From their R. & D. Centre, North of London, they have and are continuing to deliver, on a global basis, probably the world's most advanced systems in the fields of Transaction Processing, Systems Networking, Communications and High Density Media.

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We want a person with the ability to assume immediate responsibility for the effective running of our Nixdorf 8870/1 minicomputer, to maintain systems software and ensure user satisfaction through liaison, training and technical support.

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We will provide full training in BASIC to enable you to maintain systems for your installation. The qualifications required for this position are:-

*Proven supervisory skills
*A good working knowledge of minicomputers
*A basic understanding of programming
*Ability to produce procedures documentation and reports
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We are the UK subsidiary of an American Company involved in the security business. The group has other subsidiaries worldwide. Our success to date is based on total commitment. This is a demanding position, it requires the best. If you think you can handle it, then contact our Advising Consultant, IAN PAYNE ON 021-236 3781 (24 hour answering service).

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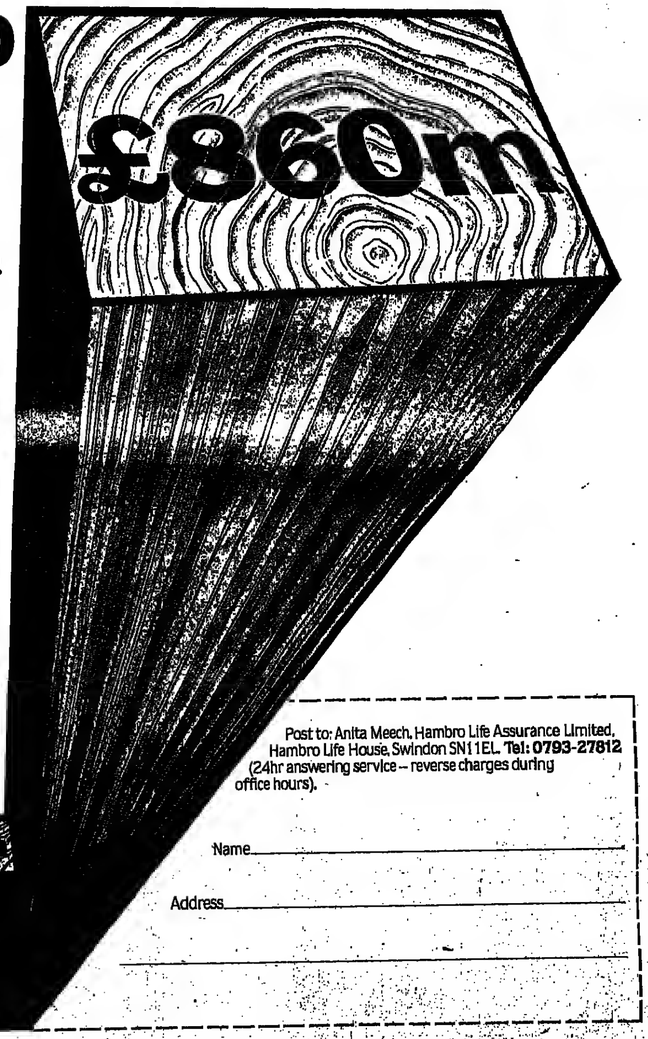
1980



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The people

The youthfulness of Hambro Life is also reflected in our staff — average age, taken throughout the company, is 27! Standards are high, but the atmosphere is informal.

And there is only one way to get on: you simply have to earn it. All promotion is based on merit.

Applications

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Min. 2 yrs. supervisory exp. + working knowledge of cobol required for small site using Burroughs mini in N.W. London.

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for
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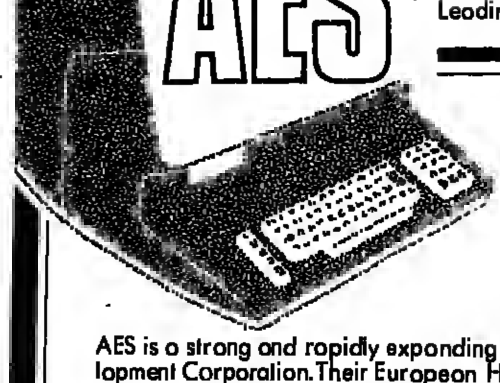

technical support manager and software systems engineers

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technical support manager Responsible for training, liaison and issuing of engineering documentation to the distributors and direct sales operations.

software systems engineers To develop application software for wordprocessing systems.

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(11)

Communications sales with market leaders

Racal-Milgo Limited is a world leader in the field of data communications and the largest private supplier in the UK. But this is just the beginning.

Our present comprehensive range of equipment (and exciting future products) will enable us to exceed all previous records, which are in themselves the success story of the electronics industry.

We are now recruiting additional SALES ENGINEERS in all areas, who will sell the finest products to computer-based users.

Ideal candidates will be able to demonstrate success in the area of data communications or electronics. More important, though, is your ability to convince us that you could become a successful member of our professional sales team.

In addition to an attractive basic salary you will receive a Company car and commission based on realistic sales targets.

To support our field sales team we also require additional INTERNAL SALES ENGINEERS in our Reading, Manchester, Birmingham and Edinburgh offices.

These important in-house positions include direct interface with our customers, and our own sales, marketing, engineering and field service departments. We are therefore looking for energetic people with technical backgrounds and a good telephone manner.

All positions carry competitive salaries and benefits packages, and relocation assistance will be given in appropriate cases.

Write to, or call,
D.J. Kichenside,
Personnel Officer,
Racal-Milgo Limited,
Richmond Court,
309 Fleet Road, Fleet, Hants.
Tel: Fleet (02514) 22144

Britain's fastest growing electronics group RACAL

Just keeping the paper moving?

- ☐ No challenge?
- ☐ No variety?
- ☐ All routine?
- ☐ Uncertain future?
- ☐ No real prospects?
- ☐ Travel treadmill?

Why Culham is different
Because Culham is an experimental laboratory involved in the very latest scientific research into fusion, our computer staff are associated with a variety of interesting projects providing excellent data base experience. The work is rarely routine and offers considerable challenge and job fulfillment. You would be part of a team working on a range of problems, including scientific and administrative ones.

What else we offer
The relaxed, friendly atmosphere helps you settle down quickly once you start. Banking, shopping, sports and leisure activities exist on site and there is easy access to Abingdon and the surrounding towns. Oxford is just 12 miles away.

Why Culham suits single as well as married people
An excellent residential hostel provides pleasant accommodation for those applying from outside the area. A married applicant may also stay here while arranging housing locally. Culham is situated in attractive Thames Valley countryside away from the hassle of city travel and traffic.

We have vacancies for various computer staff – one of them could be right for you. Why not contact us for more details?

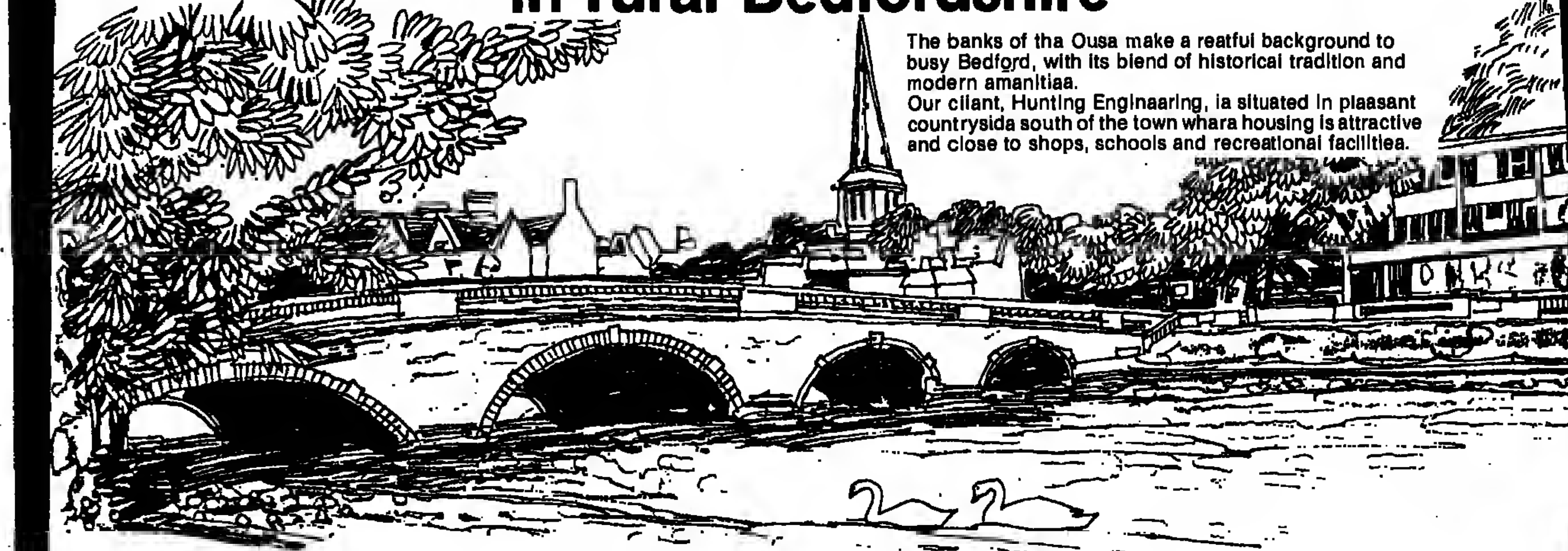
Send the coupon to Mrs Sheila Taylor, Culham Laboratory, UKAEA, Abingdon, Oxon OX14 3DB. or phone Abingdon (0235) 21840 Extension 6399 or 297.

Culham Laboratory

Please send me an application form for Computer Vacancies
Name
Address

MINIS AND MAINFRAMES

in rural Bedfordshire



The banks of the Ouse make a restful background to busy Bedford, with its blend of historical tradition and modern amenities.
Our client, Hunting Engineering, is situated in pleasant countryside south of the town where housing is attractive and close to shops, schools and recreational facilities.

Career opportunities for

EXPERIENCED PROGRAMMERS

Salaries from £5,500 p.a. to £10,900 p.a. plus benefits.

- **Commercial, Scientific and Software vacancies**
- **Big ICL mainframes, Prime minis, micros.**
- **More new work and more variety.**

A programmer at Hunting Engineering is special. But not necessarily a specialist.

There is a big commercial requirement for COBOL programmers. And we would be delighted to recruit you into positions up to team leader.

But the scope is much wider and your horizons won't be limited by your current specialisation.

You could get in on the exciting developments in graphics and CAD. Or solve the tough and demanding software problems created by tomorrows technology. Or experience the total control and heady responsibility of the one man, one project, one micro revolution.

At Hunting Engineering you can do all these things and more. Without changing jobs, filling in forms and going to endless interviews.

So if you are currently a commercial **COBOL programmer** on any machine, **a scientific programmer** or a **systems programmer** with solid ICL or Prime experience, come along to our Informal Interviews. You will find it a rewarding experience.

Informal interviews

Come and join us and senior d.p. management from Hunting Engineering for a drink and an informal chat about new opportunities, money and future prospects. We will be at the four centres below and look forward to meeting you.

Tuesday 25th March 12.00 noon-9.00pm
STEVENAGE
The Roebuck Hotel. Junction of the Hertford road and the old A1.

Tuesday 25th March 12.00 noon-9.00pm
BEDFORD
The Swan Hotel. On the embankment next to the bridge.

Wednesday 26th March 12.00 noon-9.00pm
LUTON
The Luton Crest Motel. Next to Junction 11 of the M1 motorway.

Wednesday 26th March 12.00 noon-9.00pm
MILTON KEYNES
The Bull Hotel, High Street, Stony Stratford.

If you can't make these dates call Mary Stone. She'll send you details on the company, its track record and what its growth plans can mean for your career.

CASTLE RECRUITMENT

271 High Street
Berkhamsted, Herts.
Phone: (04427) 73151

Unequalled in its range of job opportunities

BRITISH AEROSPACE

BRITISH AEROSPACE DYNAMICS
DESIGN AND ENGINEERING OFFICE, SPA ROAD, BOLTON

THE NORTH-WEST'S NEW DESIGN AND ENGINEERING COMPLEX

We are engaged in the development of advanced technology guided weapon systems and associated military equipment. We are forming a new group of about 20 people to develop:

SOFTWARE PRODUCTS
FOR MINI-MICRO COMPUTER APPLICATIONS IN PRIME EQUIPMENT AND A.T.E.

This group will employ SOFTWARE DESIGNERS, SYSTEM ANALYSTS, PROGRAMMERS and computer orientated ELECTRONICS ENGINEERS with knowledge of CORAL and ASSEMBLER languages for the development of real time software test programs and proving techniques and of testing techniques for microprocessor based products.

We wish to appoint a GROUP CO-ORDINATOR who will lead and develop the Group and take part in the further recruitment of staff.

Facilities available will include a development computer, a remote job entry terminal to a mainframe computer at Stevenage and field equipment for Service use. An initial training period may be required at Stevenage for some of the positions.

We also have vacancies for ATE APPLICATION ENGINEERS working on production ATE, for our Quality Department, with ATLAS experience.

Applications are invited from Computer Scientists or Electronic Engineers of Degree or HNC standard, or Physicists and Mathematicians with suitable background experience in operating systems and computer hardware/software development.

Applicants, male or female, should apply in writing to:
P.G. Blount,
Senior Personnel Officer,
British Aerospace Dynamics Group,
P.O. Box 34,
Lostock Lane,
Lostock, Bolton.

BRITISH AEROSPACE
DYNAMICS GROUP
BOLTON

(202)

ANALYST PROGRAMMER
Circa £7,500 p.a. + benefits

The Barclays Unicorn Group Limited, a leading Life Assurance and Unit Trust Company, requires an Analyst Programmer to work in their East London Head Office.

Although we use an ICL 1904S under George III for our mainframe systems we also use a large Data General Eclipse, 1MB Main Memory and 16 VDU's, for Online Data Capture. Development plans, which include Interactive New Business Systems for the mini, have created this vacancy which will appeal to an experienced programmer who is keen to move into systems work. The successful candidate will have a good academic background and Cobol experience.

This is the opportunity to work in a small team where the scope exists for Team Leadership or Systems Work. The starting salary range of £7,000 to £8,000 is currently under review, while as a Barclays Bank employee the conditions of employment and fringe benefits are substantial. These include a non-contributory pension scheme, staff restaurant and luncheon vouchers, a profit sharing scheme and also a special house purchase scheme.

Please apply to:

B. L. T. Parker,
Administration Manager,
Barclays Unicorn Group Limited,
Unicorn House,
252/256 Romford Road,
London E7 9JB.
Telephone: 01-534 5544.

BARCLAYS UNICORN GROUP

(250)

COMPUTER CAREER OPPORTUNITIES
COLCHESTER

SYSTEMS ANALYSTS AND PROGRAMMERS

Vacancies exist within our Data Processing Organisation for these positions. Applications are invited from persons with a minimum of one year's experience of working in a commercial or financial environment. The Society's installation consists of an I.B.M. SYSTEM 370/148 operating under DOS/VS. To be replaced in September by a SYSTEM 4341 operating under DOS/VSE. Programming languages are ANS COBOL and BASIC ASSEMBLER using interactive program testing methods. A knowledge of DL/I and CICS would also be an advantage but not essential. Salary negotiable to £5,800 for Programmers and £6,800 for Analysts.

Prospects are excellent and benefits include a non-contributory pension scheme, subsidised mortgage facilities, four weeks' holiday and staff restaurant. A sports centre will be opening shortly. Assistance will be given with relocation expenses where appropriate.

Please write giving full details of age, qualifications and experience to:

The Manager,
Head Office Staff Administration Dept.,
The Royal London Mutual Insurance Society Ltd.,
Wellington House, Butt Road,
Colchester, Essex.

(201)

SENIOR PROGRAMMERS N. SURREY c.£8,500
Applicants should have at least 2 years' COBOL programming experience preferably trained on IBM equipment and be able to supervise Junior Programmers

PROGRAMMER/ANALYST N. SURREY c.£8000
An experienced Programmer/Analyst is required for analysis design and programming to develop new systems and support existing applications. 2 years' COBOL programming experience essential.

SYSTEMS ANALYST CITY £8000+
Applicants with at least 18 months' systems experience will be responsible, if successful, for aspects of a project from feasibility to implementation.

CHIEF PROGRAMMER CITY c.£10000
You will co-ordinate teams of programmers working on a wide variety of commercial applications using COBOL in an IBM mainframe installation. This is a demanding job requiring at least 6 years' programming experience and management ability.

These are but a fraction of the vacancies we have. If you wish to apply for any of the above positions or to find out what other positions we have to suit you, please telephone for details and an application form.

AMES PERSONNEL
Employment Agency Suite 14, Dryden Chambers, 119, Oxford Street, London, W1R 1PA Tel: 01-434 1106

(260)

Programmers/Analysts

Fodens of Sandbach, in rural Cheshire, are one of the world's best known and most respected vehicle manufacturers.
Our current installation comprises an IBM 370/148 operating under IMS/VS and using Database and Teleprocessing techniques. We're firmly committed to establishing a totally secure company system utilising fully integrated operational data for management reporting and decision making. In order to undertake and maintain this programme we now have the following attractive opportunities.

Chief Programmer
up to £8000 (ref: SV407)

Senior Programmer
up to £6600 (ref: SV391)

Systems Programmer
up to £6800 (ref: SV388)

Application Programmers
up to £5700 (ref: SV412)

Senior Analyst
up to £7100 (ref: SV427)

Ideally programmers will have had experience of 2 languages, one of which should be either PL/1 or COBOL, and for the Senior positions, 3 years' experience is desirable.
The Senior Analyst position calls for considerable experience of systems, ideally computer based, in a manufacturing environment with probably an HNC in Engineering or Computer Science.
In addition to attractive salaries, these posts offer first rate company benefits including a superannuation scheme. Career prospects are also excellent.
Set in the beautiful Cheshire countryside, Sandbach is within easy reach of Manchester, Liverpool and Stoke and has good road and rail links to all other parts of the U.K.
If you are interested please contact Sue Thornley, by telephoning Sandbach (09367) 3244, ext. 42, for an application form and return it as soon as possible quoting the reference shown.

Foden Ltd., Elworth Works, Sandbach, Cheshire. Tel. 09367-3244, Ext. 42.

FODEN the truckmakers

(182)

CONTRACT PROGRAMMERS
with HONEYWELL, IDS/TDS experience

For Midlands & North of England
Send c.v. to: M.S.R. (Software) Ltd.
2 Chichester Rents
Chancery Lane, London, WC2
or Telephone 01-468 3868

(266)

YOUR CAREER CHECK LIST

1. Career grade programming with reviews. ☐
2. IBM 370/158AP MVS 8 megabytes ☐
3. Relocation assistance. ☐
4. Wide span of applications. ☐
5. Job security and superannuation. ☐
6. 120 VDU network. ☐
7. Batch, tp, database applications. ☐
8. Salary range £5034-£7017*. ☐
9. Retraining from other languages to PL/1. ☐
10. 40 minutes to Central London—5 minutes to open country. ☐
11. Modern offices, interactive programming IPT. ☐
12. Payment of salary in advance. ☐

SIX OR MORE TICKS THEN READ ON

WE NEED
Application Programmers with two-plus years experience of high-level language. We also have vacancies for lesser experienced staff.

WE ARE
LOLA—London On-Line Local Authorities.
A computer consortium of four London Boroughs based at:

ENFIELD NORTH MIDDLESEX
Said to be one of the most advanced local government installations in the country. Recently featured on BBC/TV.

Write, call or telephone:

LOLA

Beryl Dorrington
LOLA
Tower Point North, Sydney Road
Enfield EN2 6UE
01-366 6811 (Ext. 276)

*Comparability pay award pending.

BOX Nos.
Box number replies should be addressed to:
Box No. [illegible]
c/o Computer [illegible], London
Dorset House, Stamford Street, London [illegible]

COBOL PROGRAMMER
Up to £8,100 pa — European Travel

Spain ... France ... Sweden ... Italy – these are just a few of the places you could expect to visit in your role as a Programmer for our European Sales Operation.

What does the job involve? The Division provides a complete range of credit and leasing plans for Ford Main Dealers and their many retail and industrial customers in 10 European countries. Which means that you will be writing accounting and management information systems at our Brentwood Head Office (your base) and implementing them in the various European locations. This involves problem solving on site and training our European staff.

Qualifications? A sound knowledge of COBOL and the ability to travel for extended stays abroad is essential. Ideally you will have experience of UNIVAC 90/30 equipment. Familiarity of BASIC and RPG II would be an advantage.

The starting salary range will be £6,800 – £8,100 p.a. dependent upon experience. Benefits include 21 days holiday, £180 p.a. holiday bonus, 80p per day LV's and, of course, the Ford privilege car purchase plan.

For an application form please write or telephone to:

Steve Whitbourn,
Staff Personnel Officer,
Ford Motor Credit Co. Ltd., Regent House,
1 Hubert Road, Brentwood,
Essex CM14 4QL.
Telephone Brentwood 216681
(24 hour ansaphone).
This position is open to male and female applicants.

Ford Motor Credit Company Ltd

(166)

Programmers
Major commercial projects to £8,000 + profit share bonus

A leading computer consultancy and software house, Fraser Williams, has a permanent staff of over 250 at offices throughout the U.K. and in North America, servicing an impressive list of clients in all sectors of commerce, industry, government and science. Now attractive career openings have arisen at our expanding St. Albans office for experienced Cobol, Basic and Databus programmers to work on a variety of challenging commercial projects based on IBM, ICL, Data General, DEC and Vantek minis and mainframes.

We would also be interested to hear from programmers who can demonstrate solid experience on other equipment and would be willing to be retrained.
For further details talk to Bob Carr, our Branch Manager, on St. Albans (56) 34301.
Alternatively, write to him at:
Fraser Williams (London) Ltd.,
3a Canberra House,
17-19 London Road,
St. Albans,
Herts. AL1 1LE.

Fraser Williams
Computer Consultants
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(177)

COMPUTER WEEKLY
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the newspaper computer people rely on

SMR
Sales & Marketing Recruiters Ltd
Victory House, 99 Regent Street, London W1R 7HB

SALES EXECUTIVES
For goodness sake get it right this time!

Sales and Marketing Services is unique in its ability to provide facilities for Sales Training, Market Research and Psychological Analysis as well as the Recruitment of sales and sales support personnel.

We have the skills to provide careers guidance for sales and marketing personnel as well as having access to all the major computer organisations. Thus we are ideally equipped to find the right jobs with the best companies.

Come and speak with us soon.

TRADER

Tel: 01-734 9776

ENGINEERING SYSTEMS
LONDON SW1 — £6K–£9K

SIA is an international company offering powerful computing services based on CDC Cyber 175 and 6600 computers and providing a support service in CAD and engineering analysis to over 700 organisations. We are the UK market leader in engineering computing services and continued growth in our business, both in the UK market and through the introduction of our services to Holland, requires further expansion of the staff within our Engineering Systems Group.

This group provides a problem solving service within engineering design and also develops and promotes new applications and provides support to our clients.

The positions created through this expansion are:

1 MECHANICAL ENGINEERS/STRUCTURAL ANALYSTS – to work as consultants within the structural team advising and [illegible] client base, drawn from the Nuclear, Aerospace, Automotive, Civil and Mechanical sectors of industry, in the use of advanced computer analysis employing finite element and finite difference techniques to solve design problems in heat transfer, stress analysis and structural dynamics.

2 SYSTEMS SUPPORT ENGINEERS – to work within the Engineering Systems Group on new projects which may involve software development aligned with SIA's present market strengths. The group is actively engaged on development in three major product areas, principally finite element, frame and piping analysis. Specific requirements here are for candidates with an engineering training, preferably aeronautical or mechanical, but with a strong leaning towards analytical and computing work.

These positions are for young engineers with a sound academic and engineering training who probably have between 2-5 years post-graduate experience in design or research and a keen interest in:

- computer methods applied to the solution of engineering problems
- applying their specialised knowledge to a broader engineering field of activity
- in working with and taking responsibility for clients.

All positions carry scope for involvement with inhouse project or development work.

Company benefits include a bonus scheme, based on targeted revenue, profit sharing, contributory pension scheme, LVs and good working conditions.

Write, in confidence, giving C.V. to:

Gerry Shoppee Manager, Engineering Systems Group

sia COMPUTER SERVICES
SIA Ltd.,
Ebury Gate,
23 Lower Belgrave Street,
London, SW1W 0NW.

(136)

RPG-II PROGRAMMERS
SALARY £6,000-£7,500

Required to join a small friendly team working on a number of interactive systems.

Prospects are excellent with training provided for movement to the post of Analyst within 12 months.

Applicants must have at least two years experience.

Please send c.v. to:

General Manager
MORPRES DATA PROCESSING LTD.
Refuge House, River Front, Enfield
Or Telephone 01-363 6742

THE SALES BIT

Follow up that proposal with the hard sell

DURING the course of any month I meet quite a few people who want to move from a technical role, typically pre or post sales support, into a selling job. Once the process of evaluating the human characteristics and career potential of the individual is completed, we usually manage to point them in the right direction; which is not necessarily into direct sales.

Sometimes our judgment is wrong, but seldom when we use psychological analysis methods. When we do get it wrong it usually relates to one or both of two simple factors — a reluctance to get involved in cold-canvassing or an inability to ask for the order. The activities between? No problem!

One of the hallmarks of a salesman who is hesitant to ask for the order is a collection of unsettled sales proposals.

In most areas of technical selling one of the final stages of the process is the creation of a sales proposal which typically states what the client needs, what the supplier is proposing in order to satisfy that requirement, the cost of the product or service and the feature-benefits and sales advantages that are implied.

For the reluctant order closer this is psychologically the end of the selling process. A statement of capability and price having been made, it's up to the client to choose.

I know that sub-contracting of responsibility sounds rather naive, but believe me it happens all the time!

Now the really hard selling begins. Admittedly the sales proposals should only be a confirmation of points already agreed, but they are still subject to misinterpretation. The proposition needs to be kept alive and it can still be influenced by hitherto unknown and apparently disinterested parties.

More to the point, the balance can easily be tipped in the favour of the competition merely because they have, since the delivery of their proposals, sustained or enhanced their personal relationship with the client, confirmed their continuing interest, and perhaps even discovered the prime criteria for decision which could have come about as a direct product of the very proposals themselves.

Proposal follow-up is a key element of the selling process. Failure to do so is a wasteful and destructive act. It could be called self-vandalism, or even masochism to create something only to destroy it by neglect at the very moment that the justification for its existence might come to fruition. That might sound a bit dramatic, but look at it another way — it's such an awful waste of time!

Proposal follow-up is an essential act which needs to be pursued with enthusiasm and efficient organisation. There is an obvious variety of methods for checking-out the status of a proposal and attempting to close the sale — personal call, telephone, letter and so on, and this is where effective organisation can be very significant.

For my own purposes I have always operated a "proposal league-table" which qualifies all outstanding sales proposals within my territory or indeed my sales operation, by such factors as total value, percentage chance of success, date of origination decision date, etc in order to provide a continuing, at-a-glance order of priorities so that the type and timing of appropriate action is clearly identifiable to my peers, my subordinates and myself.

It's the only way of gauging where and when the next sales close can best be achieved. After all, that's what selling really is about, getting the order.

Would-be salesmen need technicians need to get it firmly into their heads that selling is not a device for giving clients the opportunity to buy, it is the process of persuading them to buy a particular product — one's own.

This cannot be achieved simply by casting the bread of proposition upon the uncharitable waters of uncontrolled possibility.

TRADER

Puzzle Answer

THE difference between consecutive squares increases by 2 each time, so the first step is to find the difference between the two numbers given — which turns out to be 24,691. So the next difference will be 24,693, and 152,448,409 is accordingly the next highest square.

Graphics leaflet

A FOUR-PAGE leaflet is available from Computer Instrumentation dealing with the three levels of intelligent graphics plotter controllers for CIL drum and flatbed plotters. Based on the 16-bit TMS 9900 microprocessor, the controllers reduce the overhead on the host computer and upon personnel by handling all repetitive tasks such as calculating discrete pen movements, carriage positioning and curve and vector drawing. Copies may be had from Computer Instrumentation Ltd, Chandler's Ford, Eastleigh, Hampshire SO5 3YY.

Naked Mini book

AN illustrated 300-page handbook describing the Scout Naked Mini Model 4/04 is available from Computer Automation. Priced at [illegible] (including postage and packing), the handbook is in three main parts covering the basic machine, I/O controllers and software. Copies may be had from Neil Clements, Marketing Services Manager, CAI Ltd, Hertford House, Maple Cross, Rickmansworth, Herts WD3 2XD.

Office complex

TO serve the North of England and Scotland, Peripheral Hardware has opened a new office complex at 8 East Parade, Harrogate, North Yorks HG1 5LT. Tel: 0423 501263/4.

ENGINEERING EXCELLENCE IN TRAILERS

SYSTEMS ANALYST

£8,500 +

We are the U.K.'s leading manufacturer of semi-trailers and form part of a major international group. Resulting from a planned development programme within our Oldham Division, a new position has been created for a Systems Analyst. Reporting to the Group Management Services Manager, he/she will work closely with local Management in the development and implementation of commercial systems, which may be specific to Oldham Division or be related to Group Activities.

As part of a major in house computer development programme the Honeywell Level 6/43 has recently been installed at Head Office, with local applications planned to operate in a distributive processing environment. In addition to Manual Systems Development the Analyst will be responsible for Systems implementation on the local equipment. He or she will also be expected to identify new areas for potential computerisation systems and undertake the appropriate on line and batch systems design. Previous experience of commercial systems analysis is essential. Experience of COBOL Programming and O & M would be an advantage.

In addition to the above salary the successful applicant will participate in attractive local and group bonus schemes, and where applicable realistic assistance with relocation will be given.

Interested? Then write for an application form to Alistair Thomson, Personnel Manager.

(213)

CRANE FRUEHAUF

Crane Fruehauf Ltd.,
Higginshaw Lane, Royton, Oldham, Lancs

CROSS COMPUTER GROUP LIMITED

Cross Computer Group is a long established systems house and service bureau, which provides consultancy, systems design, programming and processing services to clients both in the U.K. and overseas. The Company believes in personal service and pursues this approach with both Clients and staff. Thus, a friendly working environment is offered in pleasant offices close to Wimbledon Station. Main line and tube services make travelling easy.

OPERATIONS MANAGER

(to £7000)

The company's WANG VS System operates as a processing service for clients' work as well as providing an in-house facility for development work.

The Operations Manager will be required to take responsibility for the day to day running of the unit.

Duties include:
Scheduling and Work Allocation
Supervision of all Data Entry and Data Control functions
Maintaining full File Security procedures
Liaising with Clients and own development staff etc.

We are looking for an experienced person who can also play a significant role in the further development and expansion of the installation. The key requirement is practical experience and good organising ability.

Please send a CV, write or telephone:
Peter Cross or George Gillespie, Cross Computer Group Ltd. Barry House, 20-22 Worple Road, Wimbledon S.W.19.
Telephone: 01-947 7411

(230)

UNIVERSITY OF ABERDEEN
COMPUTING CENTRE

PROGRAMMING ADVISER/SENIOR PROGRAMMING ADVISER

The Centre provides a computing service for Aberdeen and other Scottish Universities based on a dual processor Honeywell 66/60 computer which supports a large terminal network.

The person appointed to the above post will work on the development and maintenance of applications software and will also assist with the user advisory and education service. Applicants should have a good honours degree and experience in programming in a high level language. Preference will be given to candidates with experience in one or more of reference databases, non-numeric data processing, COBOL and graphics and an interest in software development.

Salary on ONS Grade IA/II £5052-£10,404 per annum (from 1.4.80) with appropriate placing.

Further particulars from The Secretary, The University, Aberdeen, with whom applications (2 copies) should be lodged by 11 April 1980.

(184)

CHELSEA COLLEGE
University of London

OPERATIONS MANAGER

An experienced and mature systems-orientated Manager is required to take charge of a small group of six operators and two data preparation staff, working two shifts in the College COMPUTING CENTRE at Fulham Broadway.

A Harris (VULCAN) interactive computing system is in use with other machines via a Gandalf PACX-based data communications network. A full appreciation of modern time-shared virtual memory operating systems is necessary.

Salary scale is £5,505-£6,013 inclusive, rising to £6,506 on 1 April 1980

Further details and an application form can be obtained from the Personnel Officer, Chelsea College, Frere Orpene House: Chelsea Manor Street, London SW3 3TW. Closing date 1 April 1980.

(186)

SOFTWARE PROGRAMMERS

CENTRAL LONDON
£7,500-£9,500

Are you working in a software support or development rôle? Do you want to widen your experience and improve your earnings?

If so, you could find the right career opening as a member of our clients' software group, which provides technical support in a major ICL 2900 installation. The interesting features of the post are:

- Variety — including working on operating system enhancement, performance measurement, TP and IDMS software, and providing technical support to users
- Training in TP and IDMS where necessary
- Potential for creative people to make a positive contribution
- The technical challenge of advanced systems
- Sound career progression opportunities

You should have at least two years' software experience, using a major operating system. Preference will be given to candidates with ICL experience, but software programmers with experience on other mainframes will be considered, as retraining will be provided where necessary.

Please ring us for a confidential talk, quoting ref. 704CW, or leave a message on our answering machine after hours and we'll contact you.

(199)

EDP SYSTEMS 01.637 5796
52-53 Margaret St. London W1N 7FF

Data Processing Supervisor

Birmingham *c. £7,500*

This position is an ideal opportunity for someone in their mid to late twenties to continue developing their technical skills and obtain their first experience of running a computer installation.

Our client, a successful city centre professional practice is in the process of installing its first computer to handle its accounting requirements and a DP professional is needed to ensure the installation runs smoothly with minimum disruption to day to day business. In addition, the successful applicant will be responsible for developments and amendments to the initial systems and for identifying and implementing further applications.

Candidates should have programming experience in COBOL with practical knowledge of sales, purchase and nominal ledgers. Experience of implementing computerised accounting systems together with operations experience would be particularly useful.

Starting salary will be negotiated around £7,500. Candidates, male or female, should write or telephone in confidence for an application form quoting MCS/813 to:

Mike Okninski, Executive Selection Division, Livery House, 169, Edmund Street, (P.O. Box 120), Birmingham, B3 2JB. (021 236.5011).

Price Waterhouse Associates

SALES TRAINING CONSULTANT

SALARY c. £10,000 + BONUS + CAR

amm ADVANCED MARKETING MANAGEMENT LIMITED

AMM provides training and practical consultancy to help clients market and sell their products more effectively. 65% of our clients are in the computer and computer services industries.

We need an additional consultant to analyse companies' training needs and to devise and run courses tailor-made to the situations encountered by their sales and support forces. Practical sales or sales support experience, preferably in the computer or communication industries, is essential. Training and/or management experience is desirable. Candidates, aged 28-36 should have the ability to grasp quickly the essentials of technical subjects in a range of industries.

Remuneration will comprise a salary, a turnover-related bonus, a company car and non-contributory pension and insurance schemes.

Write initially to **Edgar Francis,**
ADVANCED MARKETING MANAGEMENT LTD.
13-15 Church Street, Welwyn, Herts. AL6 9LN.

(228)

You could earn circa £12K pa in Computing

If you have sound systems design and/or programming experience we have a number of interesting posts which offer excellent opportunities to gain valuable experience within a large and expanding computer installation. There are prospects of promotion to posts with salaries of up to £11,750 (under review).

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